THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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PUBLISHED BY
THE GULF PUBLISHING COMPANY
HOUSTON, TEXAS

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Staff correspondents at all important points.

Member Audit Bureau of Circulation
Member Associated Business Papers, Inc.

BRANCH OFFICES
NEW YORK.....250 Park Ave.
PITTSBURGH....Standard Life Bldg.
CHICAGO.....332 S. Michigan Ave.
LOS ANGELES.....Haas Bldg.
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SPECIALIZED OIL JOURNALS
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Oil Man's Calendar

Dec. 2-3	Joint Annual Meeting, Standard Committees of General Mid-Continent Oil and Gas Association on Federal Income and Excise Taxation and on State and Local Taxation, Baker Hotel, Dallas, Texas.
4	West Central Texas Oil & Gas Association, Annual Meeting, Abilene, Texas.
6-10	American Society of Mechanical Engineers, New York.
14	Mid-Continent Oil and Gas Association, Annual Meeting of General Board of Directors, Tulsa, Okla.
14	East Texas Chapter, American Petroleum Institute, Kilgore, Texas.
28-30	American Chemical Society, Organic Division, Richmond, Va.
1938 Jan. 24-25	Northwest Petroleum Association, Minot, North Dakota.
Feb. 14-18	American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.
Mar. 16-18	Annual Meeting, American Association of Petroleum Geologists, Roosevelt Hotel, New Orleans, La.
24-25	Southwestern District, A.P.I., Division of Production, Spring Meeting, Blackstone Hotel, Fort Worth, Texas.

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Published every Monday. Single Copies 15 cents (Special Issues 50c). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

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PROFITS START

when you hit "pay sand"

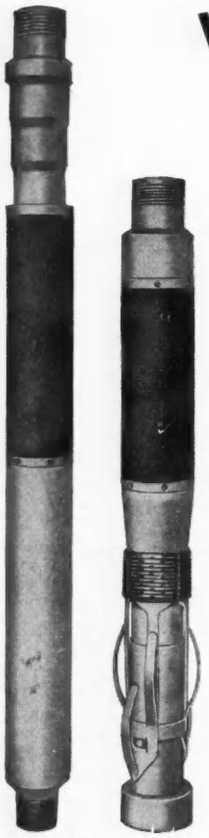

Fig. 747A Fig. 718

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LOOKING AHEAD

WITH THE EDITOR

Welding of Casing Strings . . .
Water Flooding Series . . .
Legal Restraints on Drilling and Production . . .

AS the trend continues toward deeper drilling, interest in field welding of casing increases. An early issue of this magazine will publish the first part of L. R. Hodell's study of "Circumferential Field Welding of Casing," with the following parts to be published later in sequence. His study has a practical value which can be used advantageously by those of you engaged in drilling activity.

PAUL D. TORREY, geologist with Sloan and Zook Company, generally receives an attentive ear when the discussion borders on anything related to water flooding. In fact, his organization is one of the pioneers in this work. We are proud to announce, and you will be glad to hear, that The OIL WEEKLY soon will publish Part I of a six-part thesis by Torrey on "Water Flooding of Oil Sands." The other parts will follow in due order. The subject has been gone into from all angles by the author; he seems to have overlooked no bets. And the sweet part of the thesis is that Torrey tells you how.

WITH the 70,000-barrel cut in Texas allowable in effect and having influence on those who will determine allowables in December in other important producing states, "Legal Restraints on Production and Drilling," by Northcutt Ely of the District of Columbia bar, represents a most worthwhile contribution to the list of articles soon to be published by THE OIL WEEKLY. *Ely, as you know, is considered a national authority on the subject.*

AND THE ABOVE DISTINCTLY DO NOT CONSTITUTE THE ENTIRE CROP, AS IT WERE. IMPORTANCE OF PLEASING THE MAN IN THE FIELD WITH SOMETHING THAT WILL HELP HIM IN HIS WORK IS NOT BEING OVERLOOKED IN SUBJECTS SCHEDULED FOR PUBLICATION. TECHNICAL AND SEMI-TECHNICAL FEATURES GALORE ARE "ON THE HOOK."

The changing panorama this week

THE action of the Texas Railroad Commission in materially reducing allowables November 16 is expected to have a favorable effect on the national crude market picture.

The new Texas allowables and the scheduled Sunday shut-downs of the East Texas field for four successive weeks apparently will go far toward making national production and national demand balance for November and December.

For the restraint in Texas likely will encourage continuation of strict production control in other leading producing states until the end of the year.

Danger Signs Recognized

In ordering the lower Texas allowables at the middle of November, instead of waiting, as usual, until the beginning of another month, the railroad commission was locking the stable while the horse was still safely inside. For the commission had noted that output of the wells was too high, causing some crude to go into storage; and it apparently was determined to correct the situation immediately, while the crude markets still were in comparatively good condition.

At the same time, the conservation officials of all the important producing states undoubtedly have been taking cognizance for several weeks of the various danger signs in the industry's markets, including the weak gasoline market and the threats of weakening of crude prices.

Gasoline Market Weak

The persistent weakness of the gasoline market has become a matter of serious concern. Within the past two months tank car prices of gasoline at the refineries have been steadily declining, and the downward trend still had not been arrested last week. Meanwhile, prices to dealers and service station postings also have broken materially.

Third grade gasoline could be bought last week at Oklahoma refineries for 4 cents a gallon, or for 20 percent less than the minimum price of 5 cents that prevailed at the beginning of October. At the 4-cent price, a barrel of the gasoline was worth but little more than the present price of a barrel of high-gravity crude.

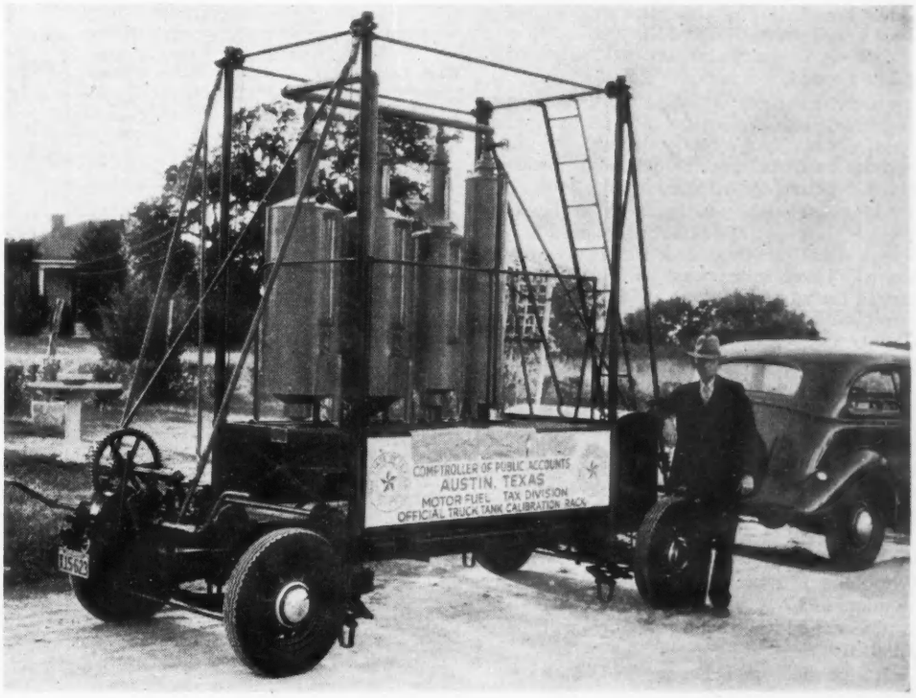
The gasoline market as a whole now is but little above the level of a year ago, whereas crude prices are about 10 percent higher, because of the crude raise of early this year.

Crude Market Threatened

In view of these circumstances, there is considerable pressure now for pulling crude prices down in line with the new, low prices of gasoline. For the refiners, obliged to accept the low prices for gasoline, and seeing no immediate prospect of better prices, have no choice but to try to salvage some opportunity for profit through obtaining the raw material at lower prices.

Thus the crude market now is definitely on the defensive, and there is no assurance that it can hold its ground, even with production strictly curtailed.

For it may develop that damage was done earlier this year which cannot now be repaired even by



COMPTROLLER GEORGE SHEPPARD of Texas has devised this contraption for gasoline tax evaders driving trucks having greater tank capacities than those for which they are labeled. Tanks on the trailer shown are built to U. S. Government specifications, each reading down to a fraction of a gallon. The tank truck to be tested is emptied of its contents, and known quantities of water in the calibrated tanks are then drained into the truck from the traveling station.

drastic curtailment; that the time when curtailment could be effective was last spring and summer, in which period more moderate crude production might have kept gasoline stocks down better in line with market requirements.

It is a matter of record that about 20,000,000 barrels of crude oil were added to storage in the early months of this year, as production seriously exceeded demand. Had the crude supply been less plentiful, refinery operations logically might have been more moderate and the output of gasoline smaller.

Crude Prices Cut Locally

While the crude oil market so far has not actually lost much ground, in the face of undermining influences, there have been a few localized instances of price reductions and of price concessions by producers.

In the Sunburst field of Montana two separate 15-cent crude price reductions have occurred within the past few weeks, bringing the posting down to 90 cents a barrel. In some other areas of the Rocky Mountain states, buyers have discontinued making purchases.

An independent purchaser recently cut its buying price in a West Texas county 10 cents a barrel below the major company posting.

Independent producers in the Schuler area, Arkansas, are offering to make crude price concessions and period contracts in an effort to attract a pipe line outlet.

In East Texas, some refiners and independent purchasers with gathering systems are temporarily offering spot quantities of crude at the posted price without additional charge for gathering service. This is being done, apparently, in order to hold on to well connections, while at the same time curtailing or discontinuing refinery operations, pending the advent of better market conditions. For the returns on refined products have dwindled until they hardly equal crude costs and expenses of operating the refineries.

Increasing Gasoline Stocks Indicated

Steadily increasing gasoline stocks, which later must be liquidated, are foreseen by the Bureau of Mines as a result of winter demand for heating oils, which with abnormal foreign demand, will keep crude production next month at a higher level than otherwise would be required.

However, at this stage of the heating season, increased stocks are seen as inevitable, although some liquidation should take place in ensuing months, if prices and production are to be kept stable. In view of the uncertainty as to the severity of the winter, stock increases are to be expected; but officials in Washington believe they should be ironed out as soon as possible.

Drilling results

ILLINOIS reported discovery of oil in the limits of Clay City, a situation which will lead to townlot drilling, and the topping of 26 feet of Benoist pay sand at 1348 feet in a wildcat near Centralia, 15 miles north of Patoka field.

New Mexico chalked up a 3¼-mile south extension for Vacuum pool, linking of the Penrose and Hardy sandy lime areas, production of 66 barrels hourly in the gap between Eunice and Monument fields, broadening of the latter field southwest by a producer, and 1700 feet of oil in a drilling wildcat near the east edge of Eddy County.

California rates mention here with a new field indicated in the Strand area of Kern County, and a request for 50 drilling permits in three days in the Long Beach Harbor extension of Wilmington field.

A Pecos County wildcat in West Texas logged Simpson lime abnormally high and lease prices in that and Crane County soared. Three miles west of Fort Stockton, in the same county, a wildcat ran into 8 million feet of sweet gas, and in Ector County the northwest part of Goldsmith field was extended a mile west.

K-M-A field's ranking as a high gravity reserve was raised by a Strawn sand west outpost in this North Texas field which flowed 2086 barrels in 12 hours; a wildcat 1½ miles east of the main field flowed by heads. A wildcat strike in Jack County assures a new high gravity field near Avis.

East Texas activities were highlighted by a reward for the prolonged search for Woodbine production in northwestern Henderson County. The well was a small producer and the field probably will be small also.

Orange field and Segno field, both in Texas Gulf Coast, were extended and presented with new sands.

A Hughes County wildcat continues to indicate it might open a new field for Oklahoma, while another in the Centrahoma area of Coal County continues to attempt to indicate such.

Kansas reported extensions for Bemis pool of Ellis County and Trap pool of Barton County, both half-mile propositions, while a new gas area was discovered north of Hugoton in west Kansas.

Market briefs

Outlook — Continued uncertainty seems likely.

Crude Market—Prices holding at established levels.

Refined Oil Markets—Gasoline market remains weak.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
November 13..	3,541,450	3,335,000
Previous week.	3,533,150	3,325,000
Year ago.....	3,040,400	2,900,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
November 6.....	307,224,000
Week ago.....	307,140,000
Year ago.....	290,194,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
November 13..	67,035,000	121,012,000
Week ago.....	67,271,000	120,925,000
Year ago.....	57,584,000	112,841,000

DRILLING

Period	Wells Completed
Past week.....	633
Previous week.....	572
Year ago.....	481
Year Total:	
This year.....	26,230
Last year.....	21,525

Technology

ENGINEERING articles in this issue constitute a continuation of the three papers from the American Petroleum Institute that were commenced last week.

On Page 19 will be found Part 2 of a constructive discussion on the care and operation of multi-cylinder gas engines by H. R. Hogaboom. The second part discusses starting, lubrication, cooling systems, mechanical maintenance and personnel factors.

Gas/oil ratio control in flowing wells has come to be recognized as a most important function in producing operations. The second part of an article on this subject, see page 27, deals with acid treatment, positive exclusion of gas, use of packers and cement. It is by R. J. Sullivan of The Carter Oil Company, and is largely descriptive of the interesting work performed by this concern at South Burbank.

Selection of screen openings for unconsolidated sands likewise has come to be an important operating function. Several important conclusions are presented in this installment by the author, C. J. Coberly.

EDITORIAL COMMENT

The President's Program

By RAY L. DUDLEY

THE President's "must program" of six months, as laid down to Congress and reported by the Associated Press, shows a deep concern for farmers, and indicates a thorough lack of appreciation of the fact that farm products are consumed in large part outside the farm.

Apparently the President has failed to take into consideration that the purchasing power of those who consume farm products must not be impaired, and that the first concern for the laboring masses should be to provide employment—gainful, sound employment—for those masses.

Happily, the Congress assembled in Washington seems to have a more practical understanding of the needs of the country and the dangers of a greater recession in business than we have had recently.

Since the first American Petroleum Institute meeting in 1921, we have failed to attend only one annual A.P.I. meeting, and at no time since 1921—not even during the dark days of the depression—have we seen those attending an annual A.P.I. meeting more jittery than at the one just closed in Chicago. Other than the fear of a reduction in the price of crude oil, which probably will not come, the fears expressed were based upon a continued falling off in business generally. The fear was very real, and while it seemed to be greater among those men who attended the meeting from the North and East, it immediately communicated itself to those from every quarter.

Yet back of it was the frequently expressed opinion that the situation could be quickly changed if the White House, or failing that, the Congress itself, took cognizance of needs which are apparent to even the most casual student of economics.

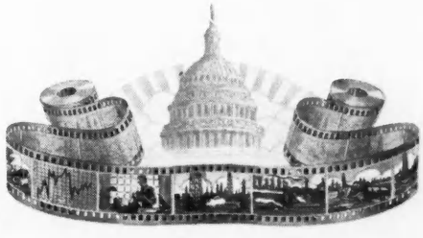
"If they will stop theorizing, will stop trying to make ALL American industry fit a straight-jacket they conceive it should wear, and will recognize that industry can absorb more employment only if given a chance, we can avoid a depression which seems headed toward us," was the thought expressed in varied ways by those at the meeting.

One executive, in commenting on the surplus tax law, privately told the writer that his company had a rehabilitation program on its pipe lines which would involve an expenditure of $3,000,000, giving employment to 1,000 men during the next six months, but that the effect of the surplus tax was to cause the company to decide to do without it. Other executives, in private conversations, mentioned definite programs of expansion which were nipped in the bud by a law which put a premium on what, in normal times, would be called poor management, and which penalizes both expansion and accumulation of a safety-backlog against the perils of recession.

With officials of theWPA sounding a warning that the hour and wage law passage will mean the dumping of additional unemployed on the public, we find no reflection of this situation coming from the White House.

If there ever was a time when industry—big industry, medium industry and small industry, would go to the limit to prevent a situation such as we had during the depression, from recurring, that time is now. And if such a condition should come again it can be laid squarely at the feet of one man—Franklin Delano Roosevelt.

Will Congress permit one man to plunge us back into depression? We hope not and we believe not.



Proration Matters

Bureau sees high December output need due to fuel demand . . . Texas makes mid-month allowable cut . . . Sunday shutdown for East Texas.

CONTRARY to general expectations the Bureau of Mines monthly forecast of needs for December did not show the sharp decline anticipated when released last week. Foreseeing heavy export and fuel oil demand, the Bureau of Mines estimated that 3,491,300 barrels of crude would be required daily. This is 17,700 barrels less than the bureau saw as the need for November this year, but is 11 percent greater than a year ago. In its report, however, the bureau let it be known that it expected gasoline stocks to continue rising, but that this was considered necessary in order to manufacture sufficient fuel oil for winter heating purposes.

On the other side of the picture, the Texas Railroad Commission last week issued its promised order curtailing production in Texas. A total of 71,586 barrels was cut from the Texas allowable as it stood on November 12. This was accomplished by a straight 6886-barrel slash in allowables outside of East Texas, and by ordering the East Texas field shut in completely for the following four Sundays. There were several outstanding factors of importance in the commission's orders. In the first place it is the first mid-month cut to be made in the state, which emphasizes the commission members viewpoint that production in the United States is too high. Then the Sunday shut down order for East Texas apparently solves the ticklish situation in that field, as it affects both pumping and flowing wells equally. In the past several months, while other Texas districts were being reduced in output, the East Texas field has been left alone, as the commission knew they could not curtail flowing wells below the quota permitted pumping wells without creating a lot of troubles, and the state's marginal well law prohibited the reduction of East Texas pumping wells below 20 barrels daily each.

Meanwhile, the eyes of the industry are turning to Oklahoma, Kansas, and New Mexico, which a week ago were asked to cooperate with Texas in cutting 175,000 barrels daily from the United States crude production. Oklahoma and Kansas have set hearings for this week. Their decisions will indicate what is in store for the industry during December.

With the Bureau of Mines seeing a continuation of heavy production, and with Texas taking the lead in cutting it materially below the bureau figures, December's statistical position is questionable at this stage.

Bureau's December forecast

Anticipated heavy exports next month will necessitate oil production at a higher level than is indicated by domestic demand. It was disclosed November 18 by the Bureau of Mines in forecasting that required average daily supply of crude petroleum in December will be 3,491,300 barrels.

While this will be 17,700 barrels less than the daily average estimated for the current month it will be 341,200 barrels, or 11 percent, higher than the actual daily production of 3,150,100 barrels in December, 1936, and 10 percent higher than the actual demand for domestic crude in that month.

It was pointed out in the monthly forecast that crude production during the four weeks from October 2 to October 30 averaged about 3,606,000 barrels daily, while during that period crude stocks declined 1,896,000 barrels net, of which 1,603,000 barrels was in domestic grades, indicating a daily demand for domestic crude during the period of 3,663,000 barrels. "However," it was commented, "this decline in crude oil stocks was offset by an unusual increase in gasoline stocks during October. This increase, equivalent to almost 3,800,000 barrels of crude oil, would indicate about 120,000 barrels daily less crude oil demand on the basis of actual motor fuel requirements."

The estimate for domestic motor fuel demand for December is 40,000,000 barrels, or 1.5 percent higher than the actual demand for December of last year when, it was pointed out, "the warmest December in more than 10 years and buying in anticipation of price increases took the refinery demand to 16 percent higher than the December, 1935, figure. The present forecast represents an increase of 7 percent over a normal demand for December, 1936. No allowance can be anticipated for unusual weather and it seems probable that the present trend of economic conditions will have a reverse effect upon domestic buying during this December as compared with December, 1936."

Further, the forecast explained, the latest figures available indicate a continuance of exports at a much higher level than last year, and motor fuel shipments for December are estimated at 3,900,000 barrels, an increase of 400,000 barrels over the November estimate.

Gasoline Stocks to Increase

Emphasizing that it is making no recommendations for increases in stocks, the bureau predicted that demand for heating oils will necessitate a heavy addition to gasoline stocks during the coming month.

"Stocks of finished and unfinished gasoline amounted to 65,380,000 barrels on September 30, 1937," it was pointed out. "According to statistics of the American Petroleum Institute, gasoline stocks increased about 1,650,000 barrels during October, the first time an increase has occurred in this month since 1931. This would place the stocks at more than 67,000,000 barrels as of October 31, and reports for the first week in November indicate that they will be increased considerably before December 1.

"Even though this may be an uneconomically high level for gasoline stocks, the bureau anticipates that it will be necessary to add 3,900,000 barrels more during December in order to supply heating oil requirements for that month. The Bureau of Mines wishes it clearly understood that it is not recommending this increase, but is forecasting what may occur in the light of present conditions and past experience."

Gasoline Allocations

Benzol and direct sales and losses of natural gasoline are estimated at 700,000 barrels, making the estimated production of gasoline 47,100,000 barrels, or 1,519,000 barrels daily, which the bureau recommends for allocation among the several refining districts as follows:

East Coast, 6,710,000; Appalachian, 1,660,000; Indiana-Illinois, 8,050,000; Oklahoma, 3,090,000; Kansas-Missouri, 2,630,000; Inland Texas, 3,760,000; Gulf Texas, 10,890,000; Louisiana Gulf, 1,430,000; Inland Louisiana - Arkansas, 930,000; Rocky Mountain, 1,110,000; California, 6,840,000.

Natural gasoline consumption at refineries during the coming month is estimated as 8.1 percent of the total gasoline required, or 3,820,000 barrels. The yield of straight-run and cracked gasoline is estimated at 43 percent, which is 1.1 percent below the actual yield for December, 1936.

"Although such a situation is not desirable from the standpoint of the conservation of crude oil," the bureau commented, "an abnormally low yield has existed for several months; and, unless later statistics indicate a change in the situation, the winter demand for heating oil, combined with abnormal gasoline stocks, may tend to keep the gasoline yield from recovering."

Application of this yield to the estimated straight-run and cracked gasoline production of 43,280,000 barrels gives refinery crude oil requirements as 100,630,000 barrels, or 3,246,000 barrels daily. Foreign crude runs to stills are estimated at 2,400,000 barrels, the same as for the current month.

Crude oil exports are estimated at 5,800,000 barrels, or 400,000 barrels less than for November, but the estimate for crude burned as fuel and losses has been increased 500,000 barrels to 4,200,000 barrels, in anticipation of the usual seasonal change.

Crude Allocations

Application of the usual methods of consumption to the total estimated demand for domestic crude gives 3,491,300 barrels as the required daily production, broken down by states as follows:

Texas 1,399,800 barrels against 1,413,300 in November; California, 679,400 against 674,600; Oklahoma, 588,800 against 598,000; Louisiana, 244,000 against 246,200; Kansas, 186,000 against 189,700; New Mexico, 104,100 against 104,800; Wyoming, 57,100 against 56,300; Michigan, 51,800 against 47,400; Pennsylvania, 51,000 against 51,800; Arkansas, 33,900 against 33,100; Illinois,

24,400 against 20,900; Montana, 15,800 against 17,100; Kentucky, 14,500 against 14,600; New York 14,300 against 14,700; Ohio, 9,900 against 9,800; West Virginia, 9,800 against 9,900; Colorado, 4400 against 4500; Indiana, 2300 unchanged.

Texas cuts allowable

The Texas Railroad Commission last week ordered a material reduction in the state's allowable effective November 16. This is the first mid-month allocation made by the commission, and was for the purpose of curtailing national output to a point in line with present consumption demands.

A total of 71,586 barrels was clipped from the Texas allowable as it stood on November 12. This was accomplished by a 6886-barrel cut in allowables outside East Texas, and by ordering the latter field to be shut in on the following four Sundays. The last move will mean an additional reduction of 64,700 barrels in the Texas daily allowable, since operators are not to be permitted to make up the allowable lost through the shut down order.

Sunday Shut Down

While the commission's new order fixed the state's allowable on November 16 at 1,354,143 barrels, it did not take into consideration the East Texas shut down order. The true effect of these changes means that the Texas allowable will average approximately 1,290,000 barrels daily, unless revisions ordered subsequently result in increases. The new allowable is 110,357 barrels daily less than the consumer demand for Texas oil during the month of December as calculated by the United States Bureau of Mines.

The reductions ordered by the commission is a cut of 30 percent of the proratable oil for all Texas fields outside of East Texas, and the Sunday shut-downs ordered for that field amount to about 13 percent of the total allowable for the month. Since East Texas was producing at the rate of 485,027 barrels daily on November 12, the Sunday shut-down order will mean a cut of 1,940,000 barrels during the next 30 days.

The shut-down order issued by the commission was promulgated ostensibly to enable the commission "to have an accurate check of the bottom-hole pressure changes, which occur in the field." and for this reason the commission found "that the entire field should be shut in while bottom-hole pressures are being taken in order to make observations to determine the most efficient rate of flow for the East Texas field."

Thus the commission ordered that on November 21, and 28, December 5 and 12, "No well in the East Texas field shall produce oil from 7 o'clock a. m., Sunday to the following Monday morning at 7 o'clock a. m., except that the commission's ninety-one (91) key wells shall be shut in on the Saturday preceding the above enumerated Sundays at 7 o'clock a. m., and shall remain shut in until the following Monday at 7 o'clock a. m., which will result in each pressure key well being closed in at least twenty-four (24) hours before any pressure tests are made, and . . ."

The commission, however, may intend to extend the order indefinitely as the shut-down order also included a notice that a state-wide hearing will be held in Austin on December 17, which day falls between the last Sunday named in the shut-down order and the next Sunday after; thus an order could be issued after the hearing in December providing for further shut-downs if the experimental survey for the commission does not result in the accumulation of sufficient data.

The new East Texas allowable will probably be acceptable to operators because of depressed market conditions for crude from the field. This was reflected in the nominations filed by operators prior to the state-wide proration hearing last week. Nominations to purchase East Texas crude during the month of December totaled 477,341 barrels daily, and the allowable on November 12 totaled 488,035 barrels or 7686 in excess of the nominations received.

Nominations filed by purchasers of Texas crude showed a total demand of 1,589,642 barrels daily for the month of December. This was 25,652 barrels less than the November nominations filed. An outstanding feature of the nominations was for production from the East Texas field, which totalled 477,341 barrels daily, about 10,000 barrels less than current production. This was the second month that nominations by purchasers of oil from East Texas had been less than the current allowable.

East Texas Pressure Up

An increase of 12.37 pounds in the average bottom-hole pressure of the East Texas field from October 12, to November 8, was reported by V. E. Cottingham, director of production for the commission. During this time the allowable for the field totalled 13,042,523 barrels, an average of 483,056 barrels per day. Cottingham pointed out that the results indicated a rise in pressure of .948 pounds per million barrels of allowable oil.

Commission Chairman C. V. Terrell, suggested that by closing down the field

Why Did East Texas Pressure Increase?

ENGINEERS are finding it difficult to account for the 12.37-pound increase in the bottom-hole pressure of the field, after having shown a heavy decline in the preceding three months. Numerous theories have been offered, but there appears to be no general acceptance of any of them.

This subject, along with the pumping prospects and general physical condition of the field, was a foremost topic of discussion last week after the Texas Railroad Commission announced its pressure findings for the month.

Some are of the opinion that channeling might have taken place from the higher pressured areas to the lower ones, and thus account for the average of the field not continuing its decline. However, this is discounted by the fact that pressures in the "fairway" zone (highest pressured district) did not show a drop, but increased slightly also.

The theory that a slight readjustment or subsidence of the over-burden in the field is responsible has been offered. There are several instances of subsidence on record, we recall those at Goose Creek, Sour Lake and Lake Maracaibo. This idea is discredited by others in view of the fact that none of the wells have recorded any unusual disturbances that would likely accompany such settlement. Settling of the over-burden at Goose Creek resulted in no apparent change in well production, while on the other hand some wells at Sour Lake started flowing after being on the pump for several years.

Generally speaking, engineers admit they are unable to devolve any worth while theories until next month's readings are taken. However, the majority hold to the belief that the increase last month is but a temporary disturbance of the downward trend. In checking the bottom-hole pressure trend of the past two years, it is interesting to note that when pressures have been declining over a period of several months that there usually occurs a month in which no loss in pressure is recorded, and usually this month registers an increase. Apparently, the bottom-hole pressure curve is to be irregular, but generally downward.

At this point a new factor enters into the situation—the shutting down of all wells in the field on Sunday. What influence will it have on bottom-hole pressures? Most likely it will assist in

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Texas Allowable Order

Effective November 16, 1937

DISTRICT	Allowable Effective Nov. 1, 1937	Allowable Effective Nov. 12, 1937	Allowable Effective Nov. 16, 1937	DIFFERENCE	
				Nov. 12, 1937 Increase	Nov. 16, 1937 Decrease
1 Southwest	27,610	31,164	29,627	.....	1,537
2 Southwest	51,574	53,881	48,432	.....	5,449
3 Gulf Coast	178,916	191,383	174,807	.....	16,576
4 Southwest	150,524	166,922	156,615	.....	10,307
5 East Central	29,151	34,512	29,766	.....	4,746
6 East Texas	58,869	71,702	62,648	.....	9,054
East Texas Field	484,068	485,027	*488,035	3,008	.....
7 West Central	48,096	49,676	48,304	.....	1,372
7C West Central	22,621	23,147	22,393	.....	754
8 West Texas	167,758	180,583	162,423	.....	18,160
9 North Texas	60,650	62,179	60,650	.....	1,529
10 Panhandle	71,840	72,853	70,443	.....	2,410
	1,351,677	1,423,029	*1,354,143		

* Does not take into account shut down of East Texas on Sunday, which will amount to 64,700 barrels daily.

on Sundays, reservoir pressures might be taken under static conditions. Cottingham immediately agreed to this plan and asserted that he believed a more accurate picture of producing conditions could be obtained under this program.

Panhandle Gas Order

At the hearing the commission presented its tentative order fixing allowables for gas production in the Texas Panhandle.

The new order is of unusual significance, although it applies to the east Panhandle field alone. After several hearings, the commission has attempted to prepare an order which would meet the requirements of a decision handed down by the United States Supreme Court, and it has announced that this order will be extended to other fields if it is validated by the courts.

The proration formula provided in the order asserts "that the daily allowable production of gas for individual wells in the field shall be determined by dividing the allowable production for the field into two parts, the first part to represent two-thirds and the second part one-third of the total allocation, and that the first part shall be distributed to the product of the acreage containing the well by the observed pressure at the well, and that the second part shall be distributed to each well in proportion to the relative producing ability of these individual wells. In no case shall more than one hundred sixty acres be allocated to any one well for the purpose of proration."

Five Fields Increased

Also during the week the Texas Railroad Commission issued orders retroactive to November 1, and extending through November 15, that raised the allowable of five fields, two in West Texas, one in Southwest Texas and two in the Gulf Coast.

The allowance for the Smith sand in the Yates field was raised from 158 to 182 barrels daily. The allowable for the Iatan-East Howard field was raised 653 barrels to 7199 barrels per day.

The allowable for the Saxet field was increased from 18,225 to 22,294 barrels. In the Manvel field the allowable for Oligocene production was increased from 3853 to 4589 barrels daily, and the Miocene allowance was increased 4090 to 4911 barrels per day.

Oklahoma-Kansas hearings are set for this week

Whatever reduction is made in crude oil output for Oklahoma and Kansas in response to the move to reduce the national output by 175,000 barrels daily will come with determination of allowables for December. The Oklahoma Corporation Commission has called its December hearing for November 26, while the hearing before the Kansas Corporation Commission will be November 23.

What orders result from the hearings of Oklahoma and Kansas is now only speculation. There will be testimony to the effect that the market demand in the two states justifies a reduction of 35,000 barrels in the two states. At the November hearing some purchasers said the demand existed for only 550,000 barrels daily in Oklahoma, while in Kansas there was testimony to the effect that the allowable there should be 170,000 barrels daily.

Such reductions would match that made in Texas on a percentage basis.

But all testimony to come before the December hearings will not be on this basis. In Oklahoma there is a conviction that its fields face a normal decline and that any further reduction in allowable will be over-stepping what will be accomplished in time without resort to orders of the corporation commission.

In Kansas the conservation authority is busy in its program of getting all fields adjusted to the new method of decline, the composite decline curve, which was adopted several months back. In order to get old wells placed on this curve, potentials must be taken. Lack of field storage and congested pipe lines have delayed potential taking. Both producers and conservation officials would like to have the fields on this decline curve before bringing the allowable down violently.

Arkansas Rodessa regulation order postponed to Dec. 1

The Arkansas Board of Conservation has again postponed the effective date of the proration order for the Miller County, Arkansas, part of Rodessa, which now has over 40 producing wells, until December 1.

Announcement to this effect was made November 13 following an executive of the board, which came after a second hearing November 12 in which Rodessa problems on the Arkansas side of the field were again aired. Originally an order was issued October 23 to become effective November 1, holding Miller County production to 10,000 barrels daily and limiting individual wells to a maximum of 400 barrels daily, with allocations made 50 percent on acreage and 50 percent on bottomhole pressure. Gas/oil ratio was placed at 2000 to 1, with a correction factor

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Labor Situation

Eleven hundred strike at two refineries . . . Pine leases still picketed . . . Pennsylvania men meet.

THE most recent event in the labor situation is the strike of approximately 1100 refinery workers at the Shell Refinery Company plant at Deer Park, Texas, and at Shoreline Oil Company's refinery at Lewis, near Shreveport, Louisiana.

Strike at Shell Refinery

After negotiations between the management of the Shell refinery and a committee of union members had failed, 900 workers went on strike at noon, November 19. Altogether the Shell refinery employs about 1200 men, of which 300 are non-union members.

According to the secretary of the local chapter of the Oil Workers International Union, the cause of the strike was the futile attempt on the part of the union to secure a contract from the company. He maintained that the union had tried unsuccessfully for a year to begin negotiations, but that the company had declined to meet them. In contrast to this statement, one of the company's officials explained that the company was willing to negotiate but had been unable to agree on a preamble to the contract, and desired that negotiations for a contract await a successful completion of the company's East Chicago plant.

Walk-Out in Louisiana

A further report of labor unrest came from Louisiana, when more than 150 employes of Shoreline Oil Company at Lewis, Caddo Parish, near Shreveport, went out on strike at the company's refinery Sunday, November 14. The workers were picketing the refinery, but no disorder had been reported, although two special deputy sheriffs were placed there.

C. M. Leonard of Chicago, president of the company was reported enroute to the scene of the strike. Pending his arrival local officials declined to negotiate with C.I.O. conciliators who arrived at the scene early in the week.

The company has a 5000-barrel lube, cracking and skimming plant.

Pine Leases Still Picketed

Although W. P. Pine, independent oil operator of Okmulgee, Oklahoma, last week conferred on several occasions with strikers representatives, no agreement had been reached so far. It was contemplated, however, to renew negotiations in the immediate future.

Pennsylvania Meeting

Representatives of Pennsylvania producers and refiners met November 19 with state officials and presented arguments for exemption of workers in both branches of the oil industry from the state 44-hour week law which becomes effective December 1.

The Pennsylvania Grade Crude Oil Association led the fight for stripper well operators who maintain that application of the law without variation will force many leases, where attendants are required to be on duty for long hours while living on the property, to be shut down.

Refineries now operating with workers employed more than 36 hours a week sought variations from the lunch-hour requirement, the eight-hour day maximum and the 5½-day week maximum, while plants on a 36-hour week basis wanted permission to have employees average the 36 hours over two or more weeks to permit a shift worker to work a double shift.

Oil in the Courts

Directed verdict of acquittal in trust trial denied, individual pleas now before court . . . Prison term for tender forgery upheld . . . Gas fraud answered.

DEFENSE counsel for oil concerns and individuals charged with violating the Sherman anti-trust laws before a federal grand jury at Madison, Wisconsin, last week commenced presentation of their side of the case by requesting a directed verdict of acquittal at this stage.

Meanwhile, the first case of a prison term for alleged tender order forgery was upheld in Texas, and Columbia Gas & Electric Corporation prepared to answer charges at Columbus that it and affiliated companies fraudulently diluted natural gas it distributed in Ohio.

Defense starts case in Madison trust trial

"The court is of the opinion that there is competent and substantial evidence in this record to sustain charges in the indictment that there was an unlawful agreement and combination by a number of these defendants. I do not feel that I would be justified in taking this case away from the jury."

With these words Federal Judge Patrick T. Stone last week dismissed a general defense motion for a directed verdict in favor of 16 major oil companies, three subsidiaries and 45 individual defendants who remained on trial at Madison, Wisconsin, for alleged violation of the Sherman anti-trust act as the week began.

The week opened with filing of a group of defense motions including, one for a directed verdict for acquittal of all the remaining defendants which was overruled by the court after three days of oral argument, a series of similar motions for certain individual defendants whose connection with the alleged conspiracy was not revealed by prosecution attorneys during the six weeks' presentation of their evidence except that they were active heads of their companies during the period covered by the indictment, and a move to strike 362 documents submitted by the government on the ground that defendants were not afforded their constitutional right to confront and examine their authors and, therefore, the documents constituted heresay.

That the court may grant defense motions filed in behalf of certain companies and individuals was indicated by Judge Stone during argument of defense counsel. On announcing his decision on the general motion for a directed verdict on behalf of all defendants, he indicated that the same ruling would not necessarily apply to all individual motions.

Again, following argument by Archie D. Gray, counsel for Gulf Oil Corporation and Gulf Refining Company, he indicated there was much doubt in his mind as to whether or not their case should be submitted to the jury. Four officials of the company were indicted but are not on trial at this time. Individual Gulf defendants did not join with other defendants and waive removal to the western Wisconsin district, and final determination of their efforts to resist removal have not been made by appeal courts in their home districts.

Adjournment of court Friday for the week end found defense attorneys in the midst of their arguments, with attorneys for Pure Oil Company and Standard Oil Company of Indiana still to be heard. With government answers still to be made, it is unlikely that presentation of the defense testimony will be started before the end of the week.

They told the court that the Gulf companies had bought gasoline from West Texas refiners for years, and continued to buy from the 14 or 15 members of the association remaining in business after the majority of the previous 79 had closed because of difficulty in obtaining federal tenders. "I suppose because they formed an association in East Texas we should have gone out of business," Gray declared.

L. M. Treadwell, counsel for Socony-Vacuum Oil Company and Wadhams Oil Company, astonished the courtroom Friday by admitting there had been a "buying program" in the Mid-Continent field and declaring that C. E. Arnott, termed by prosecution attorneys the "master mind" of the conspiracy, is, with two other officials of the company, willing to take responsibility for its participation. Treadwells statement was the first admission by a defense attorney that there had been a "program" arranged for purchase in the Mid-Continent area, other defense counsel declaring their companies purchased gasoline from Mid-Continent refiners but that the purchases were not part of a concerted program.

Four reasons were advanced by William J. Donovan, chief of defense counsel, in support of the general motion for a directed verdict: One, that trade was not unreasonably restrained by defendants who bought gasoline in the Mid-Continent field; two, that the only program in the East Texas field was a lawful selling program organized by independent refiners, and that if the court feels that defendants participated in a buying program in this area, the program clearly did not unreasonably restrain trade; three, that the "single general scheme or agreement alleged in the indictment" was not proved by the government, it having been "uniformly held" that where one large conspiracy is charged, proof of two different and disconnected conspiracies can not sustain a conviction, and, four, that a "fatal variance" from the allegations of the indictment is evident in the prosecution's failure to establish any agreement concerning the trade papers.

Calling attention to the testimony of Walter Jacobi, Tulsa, buyer for Socony-Vacuum Oil Company and its subsidiary, Wadhams Oil Company and alleged "contact man" between major companies and independent Mid-Continent refiners, who was one of the government's "key" but "reluctant" witnesses, Donovan said the major companies were to purchase only needed gasoline from small refiners and no obligatory prices were imposed. Jacobi's testimony that the companies hoped a strengthening of the tank car market, at that time depressed by distress gasoline, would result was seized by the government "as something sinister and untrue."

In support of his second point, Donovan declared the only proof in the record in regard East Texas is that there was a "selling program organized and carried on by and on behalf of the independent refiners."

"There can be no doubt that this indictment alleges in one count one general scheme to accomplish a particular purpose by carrying on two buying programs, one in the Mid-Continent and the other in East Texas," the defense attorney said in explaining his third reason.

"We are not trying two indictments alleging two separate conspiracies to carry out buying programs which happen to have a common purpose. We are concerned now with the allegations of one single general scheme."

Regarding failure of the government to show any agreement or conspiracy concerning the trade journals, he argued that starting with the buying program there follows increases in tank car spot market prices, publication of these prices in the journals and utilization solely on such published prices in fixing alleged excessive jobber and retailer prices. "No step in the plan can be eliminated without causing the whole to collapse," Donovan maintained, "for the indictment omits any other means or steps that might be availed of because of the existing failure of proof regarding the journals. Clearly there is no agreement shown to fix the prices paid by the jobbers, for the jobber price, according to the government, is based upon the prices published in the trade journals. And there is no proof that these defendants fixed the prices published in the trade journals."

A strong attack on government prosecutors for "suppressing" testimony relating to the code was delivered by T. P. Young, St. Louis, counsel for Shell Petroleum Corporation, who declared he had sat "in indignation and surprise" while the government insisted upon attempting to keep out of evidence the fact that Charles E. Arnott, Socony-Vacuum official and termed by prosecution attorneys as the "master mind" of the conspiracy, was a duly appointed government officer.

Young demanded to know why the prosecution did not bring a single witness from Washington, hurling a challenge that the government knew that the secretary of the interior and officials from the bureau of mines would "testify against them" if produced. He added that the government "carefully suppressed the testimony of its own witnesses," calling attention of the court that Dr. E. R. Lederer of the planning and coordination committee was subpoenaed but was not called to testify.

Lewin, opening the government's ar-

gument against the motion for a directed verdict, indicated again the prosecution will rely mainly on documents in their attempt to gain a verdict of guilty.

In answer to the defense argument that a single large conspiracy could not be proved by claiming the existence of two separate conspiracies in the Mid-Continent and East Texas fields, Lewin argued that Arnott was at the "top of both pools" and that the two fields "moved hand in hand, like Hansel and Gretel."

Hammond E. Chaffetz, second of the government's staff to argue against the motion, declared the oil industry "took the law into its own hands" in setting up a gasoline buying program in 1935 which the government alleged was part of a scheme to "artificially" raise prices. He attempted to answer defense assertions that the government carefully sought to exclude testimony pertaining to the code. "The whole story," Chaffetz said, "would have to be explained to your honor—just why it was that these buying programs attacked in this indictment were not under the code and why the government had no part in them whatsoever, and that fact is: That after this series of buying programs, participated in by the government in 1934, had wended their course down to November of 1934, Mr. Ickes (as petroleum code administrator) in a public statement made in Dallas, Texas, on November 14, said that he was going to have nothing more to do with any buying program, and that was known to every man in the industry.

William P. Crawford, was the third and last of government prosecutors to argue against the motion, assailing Young's declaration that evidence was suppressed. Many of the government's witnesses, he said, when placed on the stand showed signs of having just been put through a "training camp" by defense attorneys. "When we get to arguing this case before the jury, there is plenty more to be said about that," he declared.

Columbia answers gas fraud charge

Columbia Gas & Electric Corporation will make adequate answer to charges brought two months ago in Columbus, Ohio, that natural gas distributed by the company and its affiliates to 700,000 Ohio customers was fraudulently diluted with inert gases, Phillip G. Gossler, chairman of the board, advised stockholders November 15 in connection with the corporation's annual report.

In an action filed in Common Pleas Court of Franklin County, Ohio, John L. Davies, city attorney of Columbus, acting as an individual gas consumer in behalf of other consumers, seeks treble damages of $42,000,000, alleging $14,000,000 was illegally collected from customers during most of the period since 1929. It is charged that natural

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Oil at Conventions

Kerr again heads Kansas-Oklahoma Mid-Continent Association . . . Geophysicists hold meeting.

ROBERT S. KERR, Kerlyn Oil Company, Oklahoma City, was reelected president of the Kansas-Oklahoma Division of the Mid-Continent Oil and Gas Association November 19. Other officials are: Frank O. Prior, Stanolind Oil and Gas Company, Tulsa, first vice president; T. C. Johnson, Wichita, vice president, Western Kansas; Card Weiner, Chanute, vice president, Eastern Kansas; A. W. Ambrose, Cities Service Oil Company, Bartlesville, vice president, Northern Oklahoma; Lloyd Noble, Noble Drilling Company, Ardmore, vice president, Southern Oklahoma; W. R. Wallace, Magnolia Petroleum Company, Oklahoma City, vice president, Western Oklahoma; Clarel B. Mapes, Tulsa, secretary-treasurer.

Interesting papers at geophysicists meeting

The Society of Exploration Geophysicists held its third mid-year meeting at Houston November 19 and 20, the program being one of the most important yet presented. The various papers reflected the progress in all phases of geophysical exploration, and particularly stressed the importance of changes in technique to meet conditions. The attendance at all sessions was unusually heavy, the registration having been augmented by the wide interest shown by geologists from several districts.

Papers presented Friday include: "A Set of Curves to Assist in the Interpretation of the Three-Layer Resistivity Problem," by W. W. Wetzel and Howard V. McMurry, geological department, Massachusetts Institute of Technology; "On the Extension of Two-Layer Methods of Interpretation of Earth Resistivity Data to Three and More Layers," by Robert J. Watson, Carter Oil Company, and James F. Johnston, Continental Oil Company; "A Historical Review of Electrical Prospecting Methods," by W. M. Rust, Jr., Humble Oil & Refining Company; "On the Field Due to a Vertical Line Source of Current Grounded to Earth," by S. Bilinsky, Subterrex; "The Chester, Illinois, Slide—A Problem in Rheology," by Paul Weaver, Gulf Oil Corporation; "A Military Aspect of Exploration Geophysics," by E. Roane Melton, Seismic Explorations, Inc.; "The Reflection of Elastic Waves from Transition Lavers of Variable Velocity," by Alfred Wolf, Geophysical Research Corporation; "On the Strategy and Tactics of Exploration for Petroleum," by E. E. Rosaire, Subterrex; and "Seismic Exploration in Eastern Venezuela," by W. R. Ransone, Geophysical Service, Inc.

Saturday's Program

Saturday's papers included: "The Application of Fourier Integral Analysis to Some Geophysical Problems," by W. T. Born, and J. M. Kendall, Geophysical Research Corporation; "Measurements of Relative Ground Motion in Reflection Recording," by D. H. Gardner, Humble Oil & Refining Company; and "The Motion of a Geophone on the Surface of an Elastic Earth," by W. T. Born and A. Wolf, Geophysical Research Corporation.

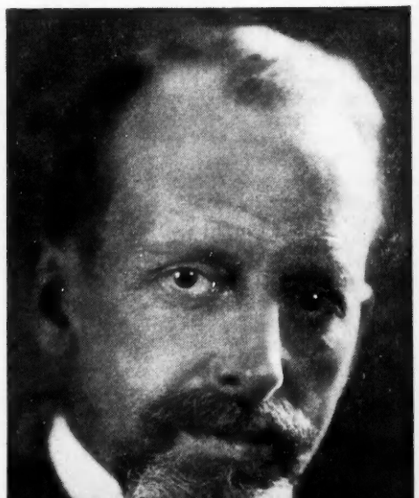
M. M. Slotnick presided at the Friday morning session, E. E. Rosaire at the Friday afternoon session, and T. I. Harkins at the Saturday morning session. A joint luncheon of the society and the Houston Geological Society was given Friday at the Rice Hotel. A stag dinner was given Friday night, with J. C. Karcher as toastmaster.

W. N. Davis Honored

W. N. DAVIS, vice president of Phillips Petroleum Company has been elected a life member of the Kansas-Oklahoma Division of Mid-Continent Oil & Gas Association.

Davis for 13 years (1921-1933) acted as president of the Mid-Continent Oil & Gas Association. He has been a director of the American Petroleum Institute since 1920, and has served three terms as Vice President for Production of the A.P.I. In 1918 he served as an Excess Profits Tax adviser to the Secretary of the Treasury, and in 1922 and 1923 as a member of the Federal Tax Simplification Board appointed by the President.

As president of the Mid-Continent Oil & Gas Association, he spent considerable time serving the interests of the oil industry in Washington. He is particularly interested in industrial movements for cooperation looking to stabilization, economic balance and conservation in the industry.



Weak Gasoline Market Mars Outlook

General business recession appears basically responsible for unsettled oil situation, but weak gasoline market is immediate cause of decline of confidence

By L. J. LOGAN, Associate Editor

THE past few weeks have been eventful for the oil industry, as they have brought a material decline of confidence in the industry's outlook.

Whereas the industry's prospects previously appeared almost wholly bright, the outlook lately has become considerably clouded.

Instead of the cheerfulness that previously prevailed, there have arisen uncertainty and doubt.

General Lull Depressing

Fundamentally responsible for the change in outlook has been the general business set-back, which finally has assumed such importance as to have an adverse psychological effect on all lines of business, including even those, like the oil business, which actually have not yet been appreciably hurt by the recession.

Despite reduced steel mill activity, volumes of business of oil companies have been hardly disturbed. Yet the mere knowledge that steel mill operations have declined sharply has thrown a blanket of fear over the oil industry.

Gasoline Situation Discouraging

More directly responsible for the pronounced change in outlook in the oil industry in the past several weeks has been the alarming weakening of the gasoline market, although this direct cause undoubtedly is largely an outgrowth of the fundamental underlying factor, the general business recession.

It seems quite unlikely that the gasoline market would have become so weak, even with inventories as large as they are, if general business had continued good.

It appears quite possible, in fact, that in the absence of the general let-down, very little, if any weakening of gasoline prices would have occurred this fall.

Industry Holds Advantages

An analysis of the oil industry's general situation offers convincing confirmation of this reasoning that the industry's outlook has become uncertain largely because of the general conditions, rather than because of conditions within the industry itself.

For even now, after being exposed for several months to the influences of the general trade lull, the petroleum industry remains in a comparatively strong position; holding advantages that normally contribute much toward the maintenance of large volumes of businesses, satisfactory selling prices, and resultant favorable earnings.

Oil Demand Stable

The circumstance that tends to assure favorable business volumes is the characteristically stable demand for petroleum and petroleum products. Even in the recent severe depression, the demand for oils did not decline materially. Early in the recovery period, the demand turned upward, and it subsequently has continued to expand steadily. This year will bring new all-time records in consumption of crude oil, gasoline, fuel oil, and other products.

Market Influences Favorable

Tending to promote stable markets and satisfactory prices, in the meantime, are the two circumstances: (1) for the industry's markets as a whole, current production is fairly well in balance with current demand, while there is not any immediate threat that this balance will be seriously disturbed; and (2) with exception of some surplus gasoline, the oil inventories of the industry are comparatively light, being in fact generally the smallest for many years in terms of days' supply at the prevailing rates of consumption, despite some expansion this year in actual quantities.

Earnings Attest Sound Position

There can be but little doubt as to the practical importance of this strong position that the industry occupies, with good demand bolstering business volumes, and with strict production control and light inventories stabilizing markets and prices.

For these circumstances explain how the oil industry as a whole has been able this year to push profits to the highest levels since 1929, while some companies quite likely will show for 1937 the best earnings on record.

Pessimism Hardly Justified

Furthermore, it does not seem quite logical or justifiable at present to turn suddenly pessimistic over the industry's outlook, despite the weak gasoline market; since there has not occurred any material alteration of this fundamentally sound situation that has been promoting prosperity.

Business volumes of oil companies almost certainly will be large not only the rest of this year but also throughout next year. Furthermore, they quite likely will be greater for 1938 than for 1937; for the normal trend of petroleum demand is upward, and only a severe depression would be likely to bring about a decline of consumption.

It is less safe to look ahead a whole year in contemplating the

prospects for keeping new supplies of oil in balance with current demand. But it must be conceded that such a balance is being virtually achieved at present, while similar success is promised at least for some more months.

In fact, in so far as present prospects are concerned, it appears that effective balancing of production and demand will continue indefinitely.

For proration has evolved to a high degree of effectiveness and stability, through the trial and error process of the past decade; and it probably now merits acceptance as a fairly dependable instrument for balancing oil output with market requirements.

Two States Offer Threats

The principal danger of over-production lies, consequently, in states where proration has not been embraced. But fortunately, satisfactory proration programs are in effect in the leading producing states except California, which depends on voluntary curtailment, rather than state-control. Illinois, which lately has assumed importance as a potential scene of flush fields, also is without state proration, and therefore constitutes a threat to orderly crude production.

But to develop anxiety over possible over-production in California or Illinois at present is to lay greater emphasis on possibilities than on realities.

There has not been any serious overproduction of crude oil in the United States for several years, and none is in immediate prospect.

Stocks Relatively Small

Meanwhile, the stocks of oils that are in the storage tanks probably should be looked upon with complacence, rather than anxiety, inasmuch as they are much smaller than in former years. From the large proportions of 1929 and 1930, above-ground stocks of oils were steadily reduced, year after year, until about a year ago, when they reached the lowest levels for about 15 years. This year the stocks of both crude and refined oils have been increased. But they still are comparatively small.

Gasoline Main Problem

As regards conditions within the oil industry itself, therefore, practically the only cause for anxiety lies in the gasoline situation.

However, it must be conceded that serious weakness of the gasoline market is alone a matter of grave concern, since gasoline is the industry's most important product, and since the gasoline market consequently exerts a major influence on the crude oil market. If the gasoline market should remain depressed for an extended period, it inevitably would tend to drag down the prices of crude oil; for refiners could not indefinitely turn out gasoline at the low prices without being able at the same time to buy the raw material at correspondingly low prices.

Crude Market Exerts Influence

Nevertheless, the action of the gasoline market always is restrained or encouraged by the resistance or sympathy of the crude market. And the ultimate level of the gasoline prices must depend considerably on the relative strength of the crude price structure.

In the present situation, with crude production under strict control, the crude market is proving distinctly resistant; although it remains to be seen whether the outcome will be an eventual decline of crude postings or an improvement of the gasoline market.

Fuel Oil Causes Problem

Several important factors have been responsible for the persistent weakening of gasoline prices since the beginning of October.

Foremost among these factors, probably, is the perennial difficulty of properly holding down gasoline production in fall and winter, while at the same time turning out enough fuel oils to meet the market requirements, which have increased sharply in recent years, because of many new installations of domestic oil burners. Too much gasoline comes forth from the refineries along with the needed fuel oil, despite deliberate lowering of the gasoline yield per barrel of crude.

A hang-over of this problem from last year, as well as a revival of it this fall, accounted in part for the downward turn of gasoline prices two months ago. The gasoline stocks early last spring reached unprecedented proportions, having been built up not altogether in conformity with prospective gasoline demand but partially only because much gasoline had to be turned out in meeting the fuel oil demand. Subsequently, last spring, summer, and early fall, the industry was not successful in eliminating the surplus supplies of gasoline, despite the fact gasoline demand was running at all-time record levels.

Gasoline Stocks Too Large

Consequently, gasoline stocks now are substantially greater than necessary. The inventories of 67,035,000 barrels on hand November 13 were 16.4 percent greater than those held on the corresponding date last year. Such an increase is only partially justified by the gain that has occurred, meanwhile, in the demand for gasoline.

For this year as a whole, gasoline demand has run about 10 percent higher than last year. But lately the total gasoline demand has continued to show similar improvement only through benefit of exceptionally large exports, while domestic requirements have been tapering off. The domestic demand for gasoline in the first 9 months of this year was 9.3 percent larger than in the similar period last year, but that for September, this year, the requirements were only 6.5 percent larger than for September last year. The present inventories, therefore, are obviously out of line with the demand situation.

Furthermore, there is danger that the surplus of gasoline may become more serious, rather than less menacing, in the next several months. For the cold weather of winter still lies ahead, and with it heavy fuel oil consumption, which again will tend to result in over-production of gasoline.

Demand Less Brisk

Aside from this problem of the existence of surplus stocks of gasoline, the gasoline market also is being affected adversely by the above noted tapering off of domestic gasoline demand. Any further decline of the strength of gasoline demand naturally would act as an additional burden on prices.

In view of these adverse factors in the gasoline situation, the industry possibly will have to become reconciled to an unsteady market and low prices at least for several months. But a bolstering influence in the meantime will be the hope that seasonally larger demand next spring will push gasoline prices higher and strengthen the whole market situation.

OPERATION AND MAINTENANCE OF MULTI-CYLINDER

Gas Engines

By H. R. HOGABOOM,
Petroleum Equipment Company, Los Angeles

Eighteenth Article of Series.

PART I of Hogaboom's paper, published in the November 15 issue of The OIL WEEKLY, presented conclusions of a study of correlation of engine horsepower with actual loads. It then went into a detailed discussion of ignition, carburetion, supply of gas to engine, mixture of gas and air at the engine, and maintenance of the entire system. Part II, published herewith, discusses starting, lubrication, cooling systems, mechanical maintenance, and personnel.

The statements and opinions herein expressed should not be construed as an official action or opinion of the American Petroleum Institute or of The OIL WEEKLY.

PART II

Although this paper was presented before the American Petroleum Institute in Chicago November 12, it is such a comprehensive discussion of the care of engines that we are happy to make it a part of The Oil Weekly's "Equipment Care" series.

DIFFICULTIES which arise in starting engines are almost automatically divided into the two groups:

1. Initial starting of a new engine.
2. Starting of an engine that has been in service and has gone "dead" for some unknown reason.

It is a simple truth that if one introduces into an engine cylinder a sufficient quantity of dry gas, mixed with the proper amount of air, compresses it sufficiently, and introduces a flame into the compression space, an explosion will follow; the engine will start.

These simple facts are well known, but observing them in action to give the desired result has unquestionably been the cause of considerable lost time in the field.

Starting New Engine

Consider first starting up the new engine that has just been installed. We must assume that the engine is equipped with a proper gas carburetor, that the ignition system is new and in excellent condition, that the valve setting and timing are correct, and the compression good. The ease of starting this new engine will depend almost entirely upon the thoroughness with which the field crew has followed the suggestions made under the subject of carburetion. The greatest difficulty in starting a new engine is caused by contamination or improper pressure of the fuel supply. Be sure the mains have been thoroughly blown out and that no air remains in the pipes or scrubber, and do not "tinker" with the carburetor adjustments until all other possibilities have been exhausted.

Old Ones Not So Simple

The problem of starting an old engine, one that has been deliberately shut down for some reason, or one that has gone 'dead" while in service, is not so simple.

It is common practice to equip all engines used in the fields with oil-pressure and water-temperature safety devices. There is a good probability that, if an engine has stopped during service, one of these devices has performed its natural function and shut the unit down due to low oil pressure or high water temperature; or has failed within itself, and should be replaced. The operator on such a call should proceed as follows:

Examine the level of water in the radiator, and of the oil in the crankcase. Finding one deficient, immediately locate the trouble. Finding both satisfactory, disconnect the wires to the safety devices—and the engine

should start. By applying the wires to the device while the engine is running, it is a simple matter to locate the trouble and correct it.

Keep Safety Wiring Connected

By all means do not permit anyone to disconnect the safety wiring and then leave the installation in operation before it is serviced. Bear in mind that an engine has gone dead while in service, the shut-down being caused by a safety device; and, unless the cause was low-water level due to natural evaporation, or low-oil level due to normal consumption, then a competent service man should look for the cause of the trouble, which may be loss of water circulation, broken fan belt, excessive load from some unexpected source, lack of oil pressure due to the failure of the oil pump, broken oil lines, sludged-up oil screen, or some other cause of trouble which the pumper can perhaps not readily locate.

If the engine has stopped due to some cause other than failure or normal operation of the safety devices, the following procedure is recommended to determine the reason:

Diagnosing Procedure

Begin on the ignition system; and, if there is no spark at all, it is suggested that it will usually save time if the complete ignition system is gone over at once. No spark with safety plugs disconnected calls for a magneto service. It is practical and advisable to carry spare magnetos for field replacements. Examine and space the plugs, renew defective wiring; and, if a defective magneto has been replaced with a new one, this second magneto will give much longer service due to this attention given to the rest of the ignition system.

The determination of compression is not complicated. An experienced man can tell immediately by the "feel" of the crank handle whether or not he has lost compression. If the compression is very low, no amount of cranking will start the engine, and a mechanical check-up and service is necessary. Do not expect the engine to stay in good mechanical shape forever; and, when the compression becomes very low, mechanical work is necessary for easy starting.

What to Do When Priming

It is possible to start engines with low compression by priming with high-test gasoline, and this method is often used. When priming, shut off the natural-gas supply until the prime is about exhausted, when the gas can be turned on again. If the speed of the engine is enough to overcome the deficiencies in compression, the engine will continue to run; if there is no success after a few trials, have it mechanically serviced.

The question of fuel supply as related to starting is extremely important, running neck and neck with ignition troubles. If the engine has good or medium compression, and there exists a fat blue spark at the plugs, it is quite evident that there is some deficiency in fuel supply.

Determine first if any gas is reaching the carburetor. If not, the cause of the trouble is evident. If gas is reaching the carburetor, determine at what pressure, through the use of common U-tube or pressure gage. Several different makes of gages are obtainable, and it is advisable for service men to be supplied with such devices. If these instruments are not available, a fairly-accurate estimate can be made by inserting the end of the flexible gas hose in water, and measuring its depth when the water pressure prevents the flow of gas. It can thereby be reasonably determined if the pressure is too far off from the accepted 8 to 12 inches of water pressure to allow proper carburetion mixture. Assuming now that the gas pressure is within the proper range, the ignition is correct, and still no explosion results through cranking, it should be determined if the carburetor has been leaking to such an extent that it permits enough gas to pass into the manifold and cylinders to cause a mixture too rich to burn, commonly called "flooding." One method of determining this is to shut off the gas supply and turn the engine over six or eight times, enough to scavenge it completely. If, during the course of this scavenging process, fire results, it is evident that the manifold had been flooded.

Carry Low Pressure

The higher the gas pressure carried, the more "flooding" will take place, and it is advisable to carry as low a pressure as possible. Operators are now dropping their gas pressure in some cases to as low as 2 inches of water, with considerable reduction in flooding difficulties. The carburetor must be adjusted under load for this reduced pressure; it is not suggested that every installation will permit of operating at such an extreme, but it certainly has merit if other conditions will permit.

May it here be suggested that an attempt be made to re-start through all the preliminary steps, herein discussed, *before* any mechanical changes or adjustments be made to carburetion, or ignition timing. Very often those unfamiliar with engines of the type under discussion will, without proper primary procedure, undertake to re-adjust everything they can get their hands on before ascertaining the actual cause of the trouble, which usually lies with the more simple forms of ignition or fuel-supply problems heretofore mentioned. It is safe to assume that the engine, having previously been running satisfactorily when last seen in operation, would have been correctly adjusted, or nearly so, and that the cause for shut-down could be traced to the more simple forms of failure mentioned rather than to such factors as timing, valve tappet clearance, or carburetion mixture.

Coping With Moisture

There are, of course, many starting difficulties that do not fall directly under the headings we have discussed. For example, on the Pacific Coast considerable trouble has been experienced with moisture. An engine is hot when shut down, and cools off before it is again placed in service. In many locations along the ocean, moisture will form in the cylinders and in the spark plugs, defying all attempts at starting until the plugs have been removed and all moisture eliminated. A suggested method is to remove the spark plugs; clean, dry, and warm them slightly. Before replacing, pour into each spark-plug hole about 3 tablespoonsful of a mixture of ½ turbine oil and ½ gasoline. Place the ends of the ignition wires in the spark-plug hole in such a way that a spark will be created as you crank, which will ignite the vapors from the mixture placed in the cylinders. With dry plugs and dry wiring, the engine should start.

Under starting, it is quite opportune to discuss the work that has been done in connection with different types of electrical and mechanical starters.

A lot of work has been done on starters, but no very great use is now evident.

The common types of 6-volt and 12-volt battery starters have been used, with batteries installed at each well.

The first cost of the installation, plus high maintenance of storage batteries, has prevented the wide adoption of this system of starting.

Various Types of Starters

Other operators have equipped each engine with an electrical 12-volt starter, starter switch and terminals, and then placed a special battery in the pumper's car with long, heavy cables that the pumper could connect to the starter terminals at the engine. Strange as it may seem, this system was not successful because the pumpers preferred to turn the crank a few times as against connecting the cables. There is also the item of cost of starters, switches, and batteries, and of attendant maintenance.

Attempts have been made to use 110-volt alternating current, available at almost every derrick, as power for A.C.-motors. There is difficulty in securing sufficient torque with 110 volts, at a reasonable cost and weight. Some operators have adopted the standard heavy-duty electric drill as a starter, with a special clutch to go on the crankhandle shaft, but there is considerable danger involved in manually holding the drill; also there is a lot of weight necessary; and here again the pumpers would rather crank by hand than unload and load the heavy drill.

Portable starters have been made from an assembly of a standard 6-volt starter and Bendix, driving through a ring gear that was carried on a plate mounted on a shaft, the entire unit resembling a banjo and weighing about 60 pounds. The pumper's car carried the battery and cables, and he transported the starter from engine to engine. The unit was not popular; the pumpers preferred to crank.

Small gas turbines mounted on the flywheel housing with a Bendix gear, utilizing high-pressure gas from the mains, have also been used. Very little progress has been made with these, probably due to first cost.

Lubrication

Unquestionably the most controversial subject that arises in connection with gas engines is that of lubrication. We must remember that, while the average multicylinder engine resembles an automotive engine—in fact, many of the types used in the oil fields are also used in trucks — its operating conditions and service requirements are quite dissimilar, and require a different technique. Fuels are different, speeds are lower, running is continuous, and operating temperatures have less variation.

Early engines are filled with automotive oils, and these oils rapidly emulsified and formed a thick "sludge" in the crankcase. During this trying time the engines were operated at fairly low radiator temperatures—below 140° F.—and no special attempt was made toward good crankcase ventilation.

Lubrication engineers advised that this sludge was caused by water carried in the gases of combustion that blow by the piston rings. Water which formed in the combustion chamber as one of the products of combustion passes the rings in the form of super-heated steam; cools and condenses in the cold crankcase; and, when picked up by the lubricating oil along with other foreign liquids and solids, it brings on the formation of this so-called "sludge."

There is still some disagreement as to just what this sludge is, but there is one common point of agreement: A non-emulsifying oil, such as turbine oil, will greatly reduce the formation of sludge. It is quite certain that the sludge is formed in the manner outlined above, and that it can be kept at a minimum by:

1. Reducing the blow-by past the piston rings.
2. Ventilating the crankcase.
3. Raising the crankcase temperature.

Blow-by is a function of the mechanical condition inside the engine cylinders. Whether or not remedial work is advisable in a certain engine, for the single purpose of bettering the oil condition, is a question that must be decided by the field men having the history of the engine. There is always some blow-by, and, of course, it increases as the cylinder wear increases and piston-ring efficiency falls off. If an engine is operating under conditions of load, water temperature, and speed that do not vary, and the lubricating-oil condition gradually becomes worse, it certainly lies within the mental scope of a good mechanic to judge when a new set of rings should be installed. This, of course, involves the cost of labor and material, plus loss of production; and it is suggested that the second and third remedies for sludge formation be tried before resorting to an overhaul.

Crankcase Ventilation

Crankcase ventilating serves to carry off the water vapors in the crankcase before condensation. This remedy is linked closely with crankcase temperatures; because it is self-evident that, if crankcase temperature is low, the vapors condense very rapidly and ventilation is ineffectual. High temperatures retain water in vapor form, and permit its removal through breathers or other openings above the crankcase-oil level.

Many operators are resorting to different methods than simple crankcase breathers. Some are connecting valve and tappet chambers by copper tubing to the air horn of the gas carburetor, utilizing the small vacuum there to pull the vapors through to the air stream entering the carburetor. Others are using the stream of air from the fan over the mouth of a simple ejector to form a small vacuum in a pipe leading to the crankcase.

In all events, provide good crankcase ventilation to keep the oil in good condition.

Proper Radiator Temperature

Crankcase-oil temperatures follow quite closely the radiator temperatures. Field tests show definitely that, insofar as oil condition is concerned, the operating temperature of the radiator should be kept close to the boiling point.

Relative to viscosity, there are adherents both to the use of light oils, such as SAE 10 and 20, and to the heavier bracket—SAE 30 and 40. In general, the preponderance of opinion points to the use of the lightest oil possible without excessive oil consumption; and the viscosity may be stepped up a grade, or possibly two, as the engine wears.

After three or four years of operating engines on turbine oil, during which time a lot was learned about crankcase ventilation and temperatures, many operators are finding that they can operate their engines very satisfactorily at a radiator temperature above 160° F., using the better grades of automotive oils, and are now doing so.

By satisfactory operation, it is meant that the oil should remain in at least fair condition for not less than 30 days of continuous operation. Many operators have set their oil-change period up to six weeks, and some to three and four months, with seemingly no damage to

their equipment—using no filter other than the cloth or waste packed-type customarily supplied with the engine.

Much work has been done with filters during the past year, and many oil reclaimers are in use. Complete results as to the over-all benefits to be obtained will require a long period; but it appears certain that the time between oil changes can be materially increased by the use of these reclaiming filters. A suction screen on the oil pump, and an additional filter of some type to catch those solids in the oil that are too small to be held by this screen, should be used.

Tests with operating temperatures indicate that oil coolers would be a detriment rather than benefit.

Cooling Systems

Cooling systems are many, both direct and indirect, closed systems or open systems; and in this group we find cooling towers, radiators, heat exchangers, and pot-type dissipators. Radiator systems only will be discussed here.

In the internal-combustion engine one-third of the heat content of the fuel is put into useful work, one-third into exhaust, and one-third into the water jacket for the radiator to waste. The quantity of water circulated per minute is determined by the temperature rise desired across the engine—which, of course, represents the temperature drop across the radiator. This rise should be kept within practical limits—to approximately 10 degrees.

What Occurs in Cooling System

No endeavor will be made to go into the technical details of radiator construction, water pumps, aerodynamics, etc., but a general discussion will be given of just what occurs in a cooling system. First of all, it is assumed that the engine manufacturer has properly designed the engine so that all passages through the block are properly cored, and water distribution to all sections is in no way impaired; that the radiator has been properly designed by the manufacturer, and is adapted to the particular installation that it might be on.

The generally-accepted practice in the design and construction of radiators for industrial use is to figure these engines will operate on a mean effective pressure not higher than 75 pounds, and the differential is generally figured at 50° F., which would mean that with 120 degrees maximum air temperature the operating temperature of the engine would approximate 170 degrees.

Three Major Items

The secret of any cooling system is the proper balance of the three major items directly related to cooling, viz., the radiator, the pump, and the fan. The water pump must be properly designed, and must be of ample capacity to handle through the motor between ½ gallon and 1 gallon of water per minute per horsepower.

Design of fans is wide and varied, and quite a bit of controversy is indulged in relative to the merits of low-speed fans over high-speed fans. A fan with six or eight blades, operating at a low speed, will develop more wind velocity with less horsepower than a high-speed fan of smaller diameter and fewer blades.

There is a limit to the amount of heat an engine can handle; otherwise the operating mean effective pressure developed in constant service could be well above 100 pounds.

The heat that can be handled by the cooling system is definitely limited by the area of the combustion chamber, its ability to transmit heat, and its general construction. The more heat that the inner wall of the chamber has to transmit, the hotter it becomes and the greater the expansion of the metal in this wall. The safe load on an engine is generally expressed in terms of "mean effective pressure," 60 pounds being generally accepted as the proper mean effective pressure to operate on oil-well pumping engine in constant service. However, for intermittent service, 75 pounds mean effective pressure is also accepted. Any higher mean effective pressure naturally necessitates, for constant service, an exceptionally large radiator; and because of this necessity we have a tendency to endeavor to dissipate the amount of heat that is generated, and to block that heat in the inner wall of the cylinder—causing no end of trouble from sticking valves, valve failure and, in some instances, fracture.

Efficient Temperature

The efficiency of an internal-combustion engine goes up in proportion to the temperature. However, as the temperature goes up, the horsepower output of the engine goes down, because less fuel can be burned per cycle. The practical temperature limit at which the engine can operate will be the temperature at which water boils.

A fault to find with extremely-hot operating engines is the fact that, with higher temperature, there is greater loss of water and, in turn, engines have to be watched more carefully. Also a hot operating engine has a tendency, in the majority of cases, to carry more of the oil in a vapor spray in the case. This causes excessive oil consumption.

Cause of Emulsion

Engines designed with cast-iron pistons can be operated very satisfactorily at 160° F., and in the majority of cases very little sludging or emulsion will be noted.

In operating any multiple-cylinder gas engine below 140° F., certain sections of thin metal on the engine will be below this point; and, with the possibility of blow-by and with the steam that is bound to pass, these thin sections of metal are an excellent medium of condensation. Cold operation is a major contributor to emulsion, and also to valve-spring fractures. By raising the temperature of an engine from 120 to 150° F., it has been definitely proved that crankcase condensation, with resultant sludging, has been greatly reduced.

The majority of troubles which occur in engines come from operating at too low a temperature—in some instances causing the loss of bearings from emulsion in the crankcase, or broken valve springs and stuck valves. Thermostats have been used, both of the closed and by-pass type. These have worked very satisfactorily in some instances, and in others have given no end of trouble—both from the condition of water in certain localities, with a reaction upon the thermostat metals, and also from the fact that, while the heat of the engine can be properly maintained with a thermostat, nevertheless the fan is still blowing cold air over the surrounding thin sections of metal adjacent to the engine, and even though the proper radiator temperature is maintained, there is considerable condensation from the low temperature of these metal parts.

Working on New Fan

Shutters have also been used, but not with any great degree of success. Work is being done on the variable-pitch fan of the airplane type of multiple-blade construction, thermostatically controlled.

This is, however, in the experimental stage. Were it possible to have the proper personnel to watch each engine and keep the radiator properly covered, hour

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by hour, a constant operating temperature could be maintained with a curtain properly adjusted to meet varying conditions. However, this is utterly impossible; and the closest "automatic" control available to date is the thermostat, which in some cases has worked out very satisfactorily and which, with the proper control of the water relative to corrosive ingredients and periodical draining, can be used with some degree of success. The second best control is obtained by a manually-operated radiator curtain.

Taking Care of System

The following represent a few helpful hints in the proper maintenance of a cooling system: First of all, the water used in the system should be a very soft water—although not necessarily distilled, as distilled water sometimes contains carbonic acid. The best water that can be used in a cooling system is taken from a large still body of water. Rain water contains considerable free oxygen, and everyone is familiar with the troubles encountered when using a hard water containing chlorides or lime.

The best radiator protection relative to clogging of the core is attained by periodic draining, and in some instances by the use of an inhibitor. Lately, soluble oil in small quantities has been used to great advantage if added before the metal of the block has become too deeply scaled or oxidized.

Suggestion for Cleaning Radiator

There are several radiator cleaners and inhibitors on the market, but they are of no great commercial advantage. If, however, a radiator is blocked or the water passages corroded, a mild solution of muriatic acid can be used if directly followed with sal soda to neutralize the effect of the acid on the metal.

Another difficulty encountered in the proper maintenance of radiator equipment, which has been given very little thought by the average maintenance man, is the passing of the products of combustion into the cooling water due to a slightly-loose cylinder head. This in some instances will cause a greasy accumulation that adheres to the core passages and reduces their conductivity. In other instances it is possible to attain an acid reaction with a mixture of water and the products of combustion. Keep the cylinder heads tight.

The water pump leaking is another source of trouble, because any leak that is apparent in the engine is a potential entrance for air; and, with a leak of any major importance, it is possible to attain water with oxygen content comparable to water run through an engine from an outside source. Keep the water-pump glands tight.

Fan Belt Adjustment

The fan belt of the engine must always be maintained in proper adjustment, and the external portion of the radiator core should be kept as clean as possible so that the velocity of the air through the core will have a direct contact with the core metal to give maximum cooling. Thermostats and water-temperature safety plugs should be removed at from 60- to 90-day intervals, and properly cleaned.

The importance of the radiator shroud is very often under-estimated. A properly-designed and located shroud will greatly increase the capacity of any radiator and fan combination, by increasing the quantity of air handled by the fan and by causing a more even flow of that air over the entire surface of the radiator. It is safe to say that all industrial-engine manufacturers have assumed that the radiator will be equipped with a sheet-metal shroud, and its absence will cause the engine to operate at a temperature considerably above that intended. A good shroud is always advisable, unless the engine is operating at entirely too low a temperature, when the removal of the shroud might give the desired temperature rise.

Radiator Curtains

Referring again to radiator shutters and curtains, a recent development is the thermostatically-operated multiple shutter with the intake manifold vacuum as the motive power to move the shutters. This seems to have a lot of merit; and, if the cost can be kept down, should find many applications.

Relative to the use of manually-controlled curtains, these are usually of a type that is pulled down from the top or up from the bottom of the radiator—the curtain being the width of the radiator core. This is a possible source of fan trouble, due to the unbalancing of the fan by stopping the flow of air through a portion of the area. If covering the radiator partly is accompanied by fan trouble, devise some other means of temperature control.

Thermo-Syphon

No discussion of cooling would be complete without some mention of the thermo-syphon system. There are many installations of engines without water pumps, but to date these have been limited to small 4-clyinder engines operating under comparatively low brake mean effective pressures.

The thermo-syphon system has many advantages:

1. Lower first cost of the engine.
2. Elimination of working parts on the engine.
3. No service on pump glands, packing, etc.
4. Less chance for infiltration of air into the cooling water.
5. More even operating temperatures.
6. In general, higher operating temperature.

There are several inherent disadvantages, some of which tend to eliminate its consideration. Radiator capacity must be increased. Large water passages are necessary, and the flow must be direct and unrestricted. Most 6-cylinder engines probably could not be cooled by this method, and it seems that it may not become popular with manufacturers or users.

Mechanical Maintenance

Mechanical maintenance can be hurried over very briefly for the reason that it represents a very small fraction of the total of engine service. With good lubrication, proper operating temperatures, reasonable load and speed, engines have been known to operate continuously for periods up to four years with no mechanical repairs. This is not the average, but does represent a possibility when conditions are right.

Undoubtedly the valve mechanism as a whole will require at least half of all mechanical work. By this term is included the valve seats, valves, valve guides, valve springs, tappets, and push rods and rocker arms, if the engine is of the overhead-valve type.

Pistons and rings may give some trouble; but, if standard clearances are adopted and adhered to, and again if the lubricating oil is kept in condition, there will be very little trouble with these parts.

Bearing trouble is almost unknown. With mean effective pressures of 60 pounds or less, and with piston speeds of around 1000 ft. per minute, and under, bearing failures can be traced in every instance to some other cause than normal wear and tear.

To return to the valve mechanism, by all means adopt

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the use of hard insert seats, for the exhaust valves at least. These seats are usually "frozen" in place, and the entire bottom and back should have full contact with the metal of the block to carry off the heat evenly and prevent warpage.

The valve seats should be ground, after installation, with a high-speed grinder, using the permanent valve guide as a pilot, and should be checked for accuracy of grinding.

Valve guides should be replaced when loose or sloppy, as a bad guide will quickly cause a valve to "pound" out the seat.

Valve springs should be checked at time of overhaul for strength and alignment. Keep all springs as near the same strength and length as possible. Trouble from breaking springs can many times be traced to moisture in the valve chambers, or to an extreme difference in temperature on opposite sides of the spring. This is quite frequently the case with L-head engines, with a light metal cover over the valve springs.

Valve clearances should be checked monthly and tappets set at no less than the manufacturer's standard. A clearance on the wide side is better than a narrow one—noise is no item, and a burnt valve is costly.

With overhead valves, the rocker arms should be set to obtain a minimum of side thrust on the top of the valve stem. The elevation of the arm should be altered, if necessary, to obtain the best results.

Mechanical maintenance should include some points in connection with the clutch, even though this unit is not a part of the engine proper. In California fields the single and double dry-plate toggle-type clutch is universally used.

To minimize clutch trouble, and to cut down vibration throughout the engine, be sure the pulleys are balanced. A V-belt pulley, machined all over, 10 to 12 inches in diameter, and turning at 1000 r.p.m., can be sufficiently unbalanced to cause lots of trouble. Install all pulleys with the rim offset from the hub, and let this rim extend up over the clutch main bearing to place the center of belt pull as close to the bearing as possible. This will practically eliminate trouble with pilot bearings. Do not use pulleys so small that this cannot be done, and avoid the use of chain drives direct from the clutch shaft.

Set the clutch operating lever in a vertical position when the clutch is engaged, so that the weight will not "ride" the throw-out collar. Do not over-grease the clutch; the throw-out collar needs grease once a day, the bearings about once a month, if the grease seals are tight. An over-greased bearing will invariably heat up.

In general, do not continually tinker with the mechanical parts of the engine; a smooth-running engine is a good engine to leave alone.

Personnel

No discussion on engine maintenance is complete without a brief statement regarding the type and qualifications of men employed to service engines. It is undeniably true that the type of service given any engine—other things being equal—will be more of a factor in the over-all operating cost than the make of engine selected.

The large operator has been able to employ his own men on regular salary, and by sad experience and lots of headaches many now have very competent service organizations.

For the small operator, the engine companies have been forced to provide service men, and the use of this service is being widely accepted. In our fields the engine distributors are contracting the complete maintenance of their engines—labor and parts—for long periods at established rates; and it certainly presents an easy and safe method of operation for the small user.

In conclusion, it is desired to indicate the range of operating costs of multi-cylinder engines used as prime movers in pumping oil wells.

Exclusive of interest on investment and amortization, total operating costs will range from $0.75 to $1.50 per day per engine, the average output being in the neighborhood of 20 horsepower.

An operator using in excess of 200 engines in this service, with piston displacements ranging from 200 to about 450 cubic inches, reports daily operating costs of $0.97 per day per engine of the larger size, $0.92 per day for the medium, and $0.87 per day for the smaller. A third operator has, from experience, built up an average figure of 7 cents per horsepower per day.

All of the above figures are for operating costs only, based upon gas at 10 cents per thousand cubic feet, lubricating oils at 60 cents per gallon, and labor at $1.00 per hour. All transportation of service men, and the cost of all parts replaced in the engine during periods extending upwards of five years, are included.

The quoted costs seem to cover the cost of maintenance and operation where competent men are employed and properly directed. If costs exceed those given, it is quite probable that money can be saved by a study of this problem of engine maintenance.

Reprints of the foregoing article are available at nominal cost. Write The Gulf Publishing Company, Houston, Texas.

SULLIVAN'S paper, Part I of which was published in The OIL WEEKLY of November 15, was presented November 12 before the American Petroleum Institute in Chicago. The first section went into an appreciation of the causes of high gas/oil ratio, well characteristics, working fluid levels, flow string design and subsurface chokes, and intermittent flow. The concluding part published herewith deals with acid treatment, positive exclusion of gas, packers, and cementing.

Statements and opinions contained herein should not be construed as official opinions of the Institute or of The OIL WEEKLY.

Gas-Oil Ratio Control In Flowing Wells

By R. J. SULLIVAN, Carter Oil Company, Fairfax, Oklahoma

PART II

In lime producing areas, such as West Texas and New Mexico, evolution of acidizing technique has encouraged improvement not only of the oil-productive capacity of wells, but also of their relative oil and gas productivities. Essentially, acidizing is tantamount to a permeability increase. When its action can be restricted to an oil-saturated section, meanwhile protecting the gas zone, the result is analogous to differential-pressure adjustment. There are a number of variations in the procedure of introducing acid and auxiliary fluids into a well with the intent of improving its gas/oil ratio. The following excerpt[8] is from the Goldsmith Pool, Ector County (Texas) Engineering Committee Report of May 31, 1937:

> "The operators are urged to exhaust all possibilities of acid treatment before resorting to shooting their wells. Shooting limits the possibilities of corrective work in event of high ratios or water encroachment. From a study of available data, it is believed acid will stimulate production as well, if not better, than shooting, outside of a few wells where it is necessary to shoot to obtain commercial production.
>
> "Best results with acid are being had by using two-stage, two-pump treatments—the operators using 1000 to 2000 gallons for the first stage, and 3000 to 4000 gallons for the second stage, oil being pumped down the annular space during treatment to confine the acid to the pay section, thus eliminating the possibility of acid going into the upper gas-bearing parts of the pay."

Issued by the same body on July 31, 1937:

> "A new type of acid treatment was tried on Goldsmith No. 26, a high-ratio well, which proved very successful in lowering the ratio. Instead of loading the hole and pumping in acid as is usually done, the casing was merely closed in, but the hole not loaded. Enough acid was then pumped in to cover the face of the pay, in this case 126 gallons. This 'shot' was allowed to stay on the face of the pay for 15 minutes, and then swabbed out. During treatment, casing pressure was 1225 pounds and tubing pressure 150 pounds. On the second stage, the acid volume was increased to 378 gallons. This was pumped into the formation slowly at a tubing pressure always less than 150 pounds. This second acid was also allowed to stay in the formation 15 minutes and then swabbed out. A last stage of 756 gallons was pumped in also at a tubing pressure less than 150 pounds and swabbed out after 15 minutes. This made a total of 1260 gallons used. Before acid, the well flowed at the rate of 1344 barrels per day with 15,000 M.C.F.* gas and ratio of 11,161. After acid, the well flowed at a potential rate of 2048 barrels per day with a gas volume of 14,147 and a ratio of 6908. This is an increase in potential of 523 percent, and a decrease in ratio of 4253 cubic feet per barrel. On a re-test through 2-inch tubing with perforations on bottom, the well flowed at the rate of 1173 barrels with a ratio of 2630. . . . The treatment described herein is recommended as a standard treatment, especially applicable to high-ratio wells where it is desirable to treat only the lower or oil pay, thereby obtaining an increase in oil with a resulting decrease in ratio."

Wells whose ratios, remedied by an initial treatment, tend in time to rise are later retreated with a proportionately larger stage of acid.

Positive Exclusion of Gas

After a well has been so exposed to free-gas migration that its characteristics climbs to an excessive height attended by the production of very large gas volumes, it is felt that the only remaining method of curtailing gas escape from the formation is a positive shut-off. Just as any other successful control method, viewed in its essentials, this quite plainly amounts to alteration of the differential pressures among oil-bearing section, gas horizon, and well. The utter absence or undependability of any true barrier stratum separating upper gas from underlying oil forces reliance of a mechanical shut-off upon an effective difference between transverse

* Thousand cubic feet.

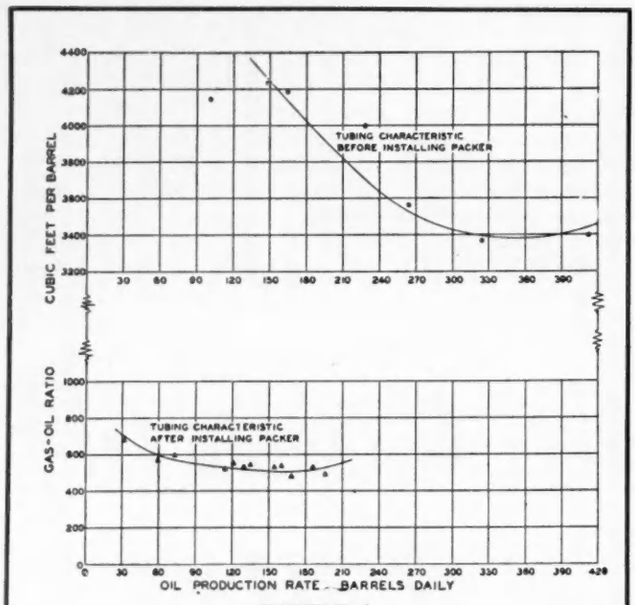

CUBIC FEET PER BARREL
TUBING CHARACTERISTIC BEFORE INSTALLING PACKER
GAS-OIL RATIO
TUBING CHARACTERISTIC AFTER INSTALLING PACKER
OIL PRODUCTION RATE - BARRELS DAILY

FIGURE 9
Effect of Formation on Gas/Oil Ratio.

and bedding plane permeabilities. Many sedimentary deposits possess this quality.

Packers

In the South Burbank Pool, where the base of the gas-invaded sand must be determined experimentally in each individual well treatment, a successive trial process is prudent in physical exclusion of gas. The local situation, together with the special under-set packer devised to facilitate inexpensive testing, has been described in an earlier publication.[9] A typical case of final formation packer results at a high gas/oil ratio well is shown graphically in Figure 9. Note that the minimum ratio obtainable prior to the packer installation was 3363 cubic feet at a daily rate of 324 barrels. The lower-curve data gathered after final setting of the packer are drafted in the lower curve. It can readily be seen that, over the entire range of readings, there is no such fluctuation of gas factor at changed production rates as in the first characteristics—the new optimum value being 480 cubic feet at 168 barrels per day. From the facts that the well's tubing capacity was somewhat reduced, that the curve inflection assumed a form linked with the well's youth, and that both minimum factor and appropriate production rate shifted back toward the coordinate origin, it seems that for all immediate purposes the lower producing section has been reverted to semblance of early life.

It is very simple, but probably undesirable, at South Burbank to set formation packers arbitrarily low in the pay sand and thus obtain a greatly-reduced gas/oil ratio at the risk of isolating oil which might later be difficult to recover. Consequently, formation-packer installations are made as close as practicable to the gas/oil contact. Subsequent to initial results of the sort provided in Figure 9, investigation revealed that, given a sound mechanical seal, prime factors then entering into the well's performance are gas-coning and drainage through the hole's area of reservoir influence. Charted continuous records gathered with recording instruments over a period of the past five months, and illustrating general lines of conduct encountered, are furnished in Figures 10 and 11. A summary of the protracted test data is made up in Table 6.

Well "J"—This case is believed to be representative of a setting in which a relatively impervious stratum intervenes between the oil and the zone pervaded largely by gas. At the beginning of the record in Figure 10 the well continued for some time to purge itself of "dead" oil used for killing. Thereafter both oil and gas production increased slowly at gas/oil ratios never exceeding 564 cubic feet per barrel. When the well was shut in and allowed 108 hours in which to equalize, it began to produce at improved ratios and with an oil rate approaching constancy, but without so pronounced a display of these proclivities as found in a well where cap gas cones downward into the producing hole. Some irregularity was introduced between third and fourth runs in meeting incidental production requirements. After equilibrium had been reached at the outset of the fifth run, nearly constant volumes of oil and gas at a practically constant tubing-head pressure were registered. Production was again curtailed for a span of 15 days covered by the sixth run, after which the well was shut in for 54 hours. When reopened for two

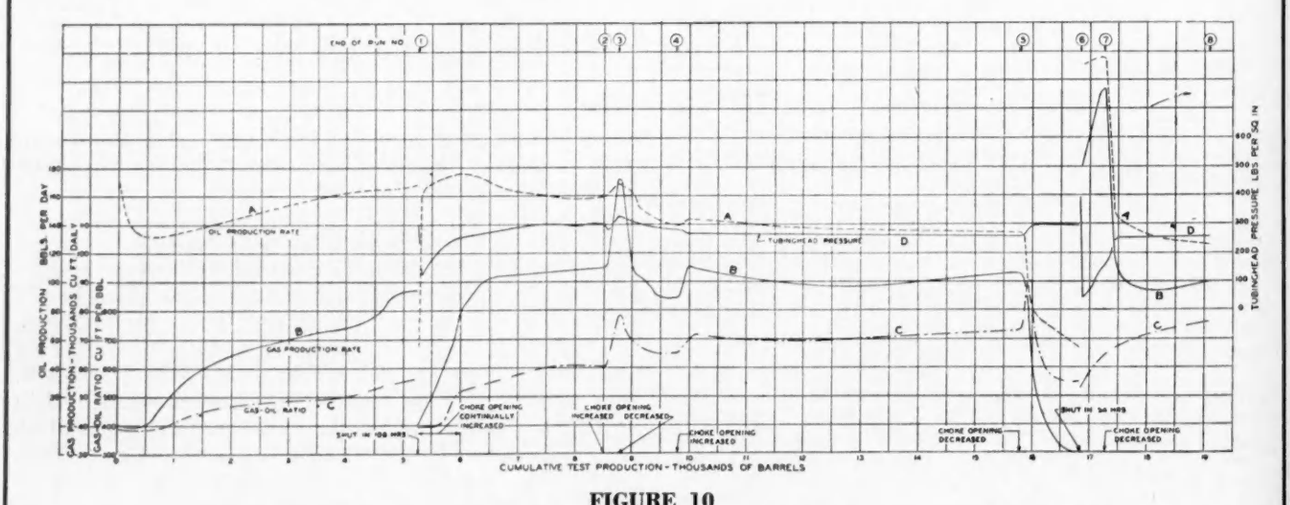
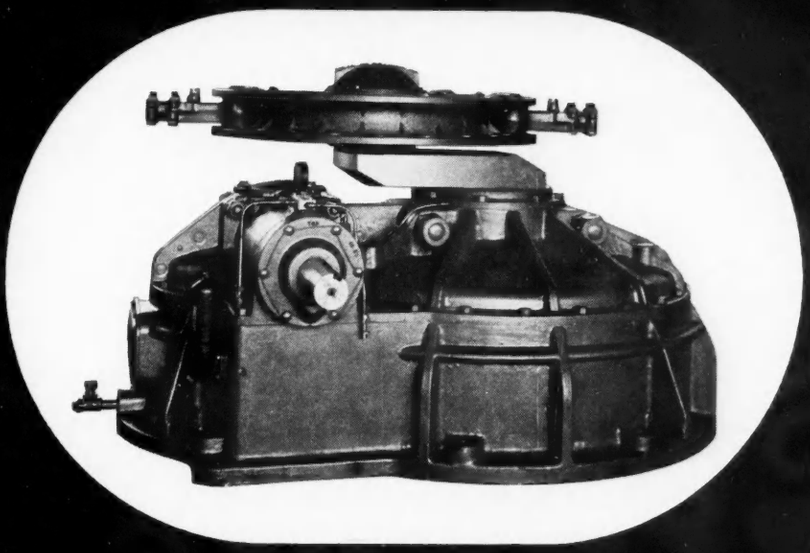

END OF RUN NO
OIL PRODUCTION RATE
GAS PRODUCTION RATE
GAS-OIL RATIO
TUBINGHEAD PRESSURE
CHOKE OPENING CONTINUALLY INCREASED
SHUT IN 108 HRS
CHOKE OPENING INCREASED DECREASED
CHOKE OPENING INCREASED
CHOKE OPENING DECREASED
SHUT IN 54 HRS
CHOKE OPENING DECREASED
OIL PRODUCTION - BBLS PER DAY
GAS PRODUCTION - THOUSANDS CU FT DAILY
GAS-OIL RATIO - CU FT PER BBL
TUBINGHEAD PRESSURE LBS PER SQ IN
CUMULATIVE TEST PRODUCTION - THOUSANDS OF BARRELS

FIGURE 10
Production Characteristics of Packer-equipped Well—Little or No Gas-Coning.

NATIONAL GEARED PUMPING POWERS

MEET ALL THE EXACTING REQUIREMENTS OF THE FIELD



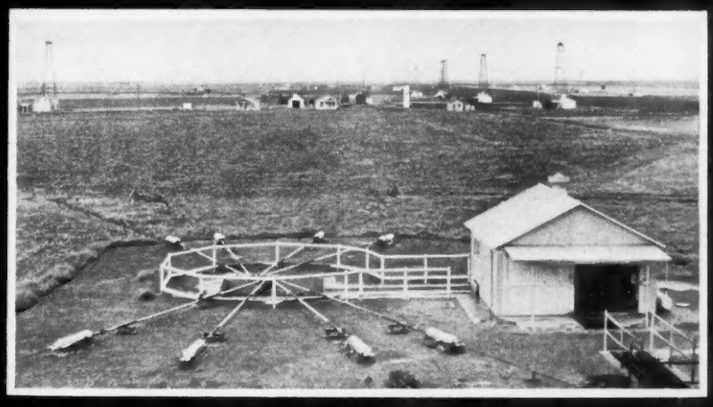


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TABLE 6
Production Characteristics—Packer-equipped Wells, South Burbank Pool

	Well "J"	Well "K"
Packer set, minus elevation, ft.	1,740	1,737
Volume of oil to kill well, bbl.	200	300
Volume of oil produced before testing began, bbl.	325	240
Pay sand shut off, ft.	26	25
Pay sand exposed, ft.	49	37
Open-hole optimum ratio	5,470	8,100
Production rate, bbl. per day	336	335
Total production (1st run) bbl. of oil	5,266	4,493
Total production (1st run) M.C.F. of gas	2,556	5,718
Gas-oil ratio (1st run)	380-564	768-1,702
Gas-oil ratio average (1st run)	485	1,272
Term of 1st run, days	36	39
Total production (2nd run) bbl. of oil	3,350	4,850
Total production (2nd run) M.C.F. of gas	1,878	8,199
Gas-oil ratio (2nd run)	390-620	970-1,900
Gas-oil ratio average (2nd run)	561	1,691
Term of 2nd run, days	21	31
Total production (3rd run) bbl. of oil	315	9,339
Total production (3rd run) M.C.F.of gas	235	23,274
Gas-oil ratio (3rd run)	718-786	1,622-3,103
Gas-oil ratio average (3rd run)	746	2,492
Term of 3rd run, days	2	63
Total production (4th run) bbl. of oil	947	1,113
Total production (4th run) M.C.F. of gas	580	2,772
Gas-oil ratio (4th run)	622-685	1,874-2,801
Gas-oil ratio average (4th run)	657	2,383
Term of 4th run, days	7	8
Total production (5th run) bbl. of oil	5,953	614
Total production (5th run) M.C.F. of gas	4,099	1,843
Gas-oil ratio (5th run)	676-754	2,970-3,030
Gas-oil ratio average (5th run)	710	3,002
Term of 5th run, days	44	7
Total production (6th run) bbl. of oil	999	819
Total production (6th run) M.C.F. of gas	607	2,066
Gas-oil ratio (6th run)	500-673	2,267-2,717
Gas-oil ratio average (6th run)	608	2,523
Term of 6th run, days	15	4
Total production (7th run) bbl. of oil	462	1,938
Total production (7th run) M.C.F. of gas	281	5,752
Gas-oil ratio (7th run)	589-662	2,847-3,119
Gas-oil ratio average (7th run)	608	2,968
Term of 7th run, days	2	14
Total production (8th run) bbl. of oil	1,844	.....
Total production (8th run) M.C.F. of gas	1,336	.....
Gas-oil ratio (8th run)	687-779	.....
Gas-oil ratio average (8th run)	725	.....
Term of 8th run, days	14	.....
Accumulated test production, bbl. of oil	19,136	23,216
Accumulated test production, M.C.F. of gas	11,402	49,624
Gas-oil ratio, entire test	380-876	768-3,119
Average gas-oil ratio, entire test	596	2,137
Days elapsed, entire test	141	166

days, the flow was felt to be dangerous to the packer seal, and was choked down toward a level between 120 and 140 barrels daily. The change was again accompanied by an originally-rising gas factor approaching constancy. From a minimum of 380 cubic feet per barrel, or practically the solution ratio, gas factors throughout the entire 141 days did not exceed 786, and displayed averages ranging from 485 to 746 in accordance with the rate of withdrawal. The over-all average for 141 days was 596 cubic feet per barrel as compared with an open-hole optimum ratio of 5470 at the start.

Well "K"—Figure 11 depicts another sequence of continuous tests taken after the setting of a packer in a South Burbank well of the sort governed only by a relatively slight difference between transverse and parallel permeabilities. A state of head flow is clearly portrayed by the first portion of the record on run No. 1. Thereafter the well began to produce regularly with very little decline in the oil rate, and steadily-increasing gas rates and factors. When the ratio had reached 1710 cubic feet per barrel, well "K" was rested for three days and then reopened. Its performance in next delivering oil at a temporarily higher rate and gas at a temporarily lower rate from its replenished zone of influence is typical of other packer-equipped wells subject to coning action. The choke setting was left unchanged throughout. The third run resulted in repetition of almost the same characteristics, with the striking development that the gas/oil ratio's ascent decelerated. Another and longer shut-in period followed by another run brought the ratio comparatively rapidly back toward the critical. Next came the fifth and sixth periods of attempting to adjust the downward differential on the gas cap so as to improve both the maximum and the average ratio per phase. No great change was effected through the sixth and seventh runs up to the present stage of the latter, the maximum ratio hovering in the neighborhood of 2900 cubic feet per barrel, but remaining responsive to temporary improvement of the average by continued stopcocking. The average factor throughout the entire record embracing 166 days was 2137 cubic feet per barrel as compared with 8100 minimum prior to packer installation. It has been learned thus far that the more prolific wells require more frequent shut-downs, but likewise that they share a tendency to reach individual maxima evidently consonant with the current stage of reservoir depletion and gas-cap expansion. Not only the averages, but also the criticals or peaks, have been retarded to values far preferable to open-hole factors.

No such complications enter, of course, if an extensive barrier stratum can be found and used as a shut-off point. For instance, another gas-cap well, where drilling logged an unmistakable shale break, produced from below a packer at gas factors approximating the solution ratio and, as sub-surface pressures dropped, mounting to only 1054 cubic feet per barrel in three years' time. A high flow rate eventually caused failure of the deteriorated packer element, so that the gas factor abruptly rose 300 percent. Packers have been beneficial in the Quirequire Pool of Venezuela in conjunction with alternate rest and production duty. Coning of gas was pronounced to be an obstacle there also.

Due to its reliance upon a strong peripheral bond,

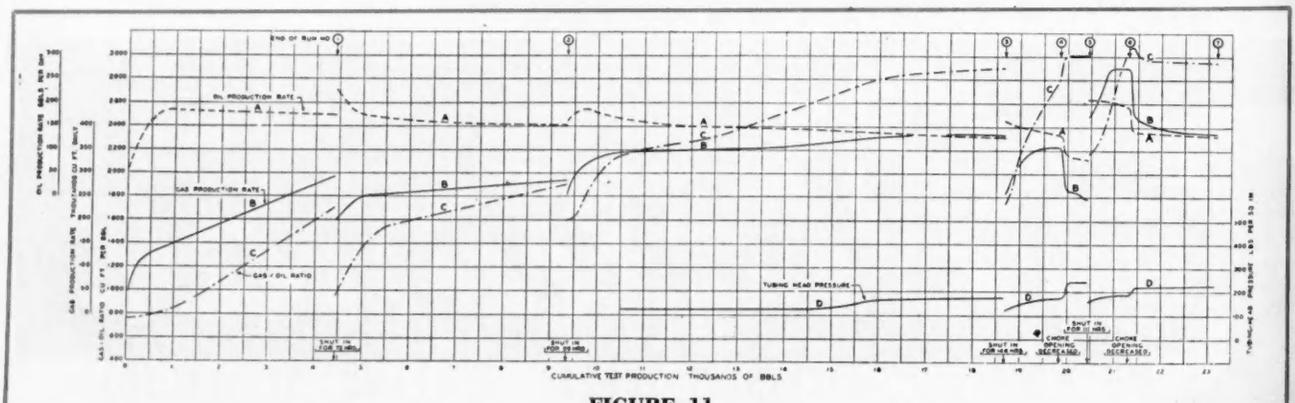
END OF RUN NO
OIL PRODUCTION RATE
GAS PRODUCTION RATE
GAS / OIL RATIO
TUBING HEAD PRESSURE
SHUT IN FOR 19 HRS.
SHUT IN FOR 89 HRS.
SHUT IN FOR 44 HRS.
CHOKE OPENING DECREASED
SHUT IN FOR 17 HRS.
CHOKE OPENING DECREASED
CUMULATIVE TEST PRODUCTION THOUSANDS OF BBLS

FIGURE 11
Production Characteristics of Packer-equipped Well—Appreciable Gas-Coning.

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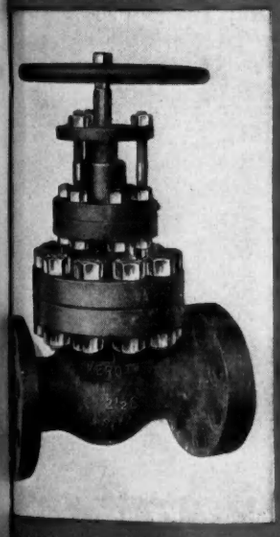
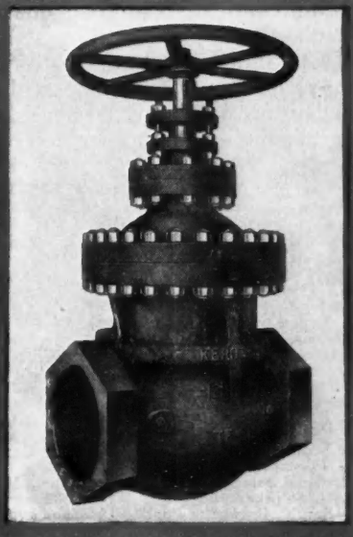


Type "G" 10,000 lb. Test Flow Valve designed and built for 5,000 lbs. working pressure—capable of meeting higher pressures. Castings are made of heat treated Manganese-Molybdenum steel with a minimum tensile strength of 100,000 lbs.



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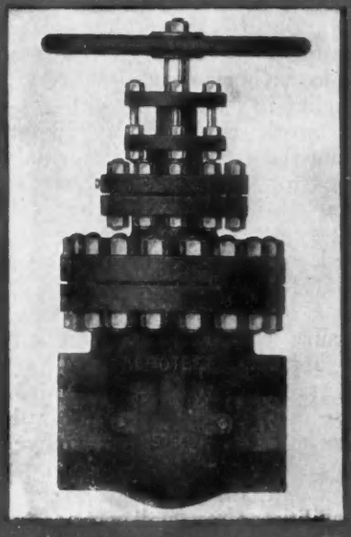

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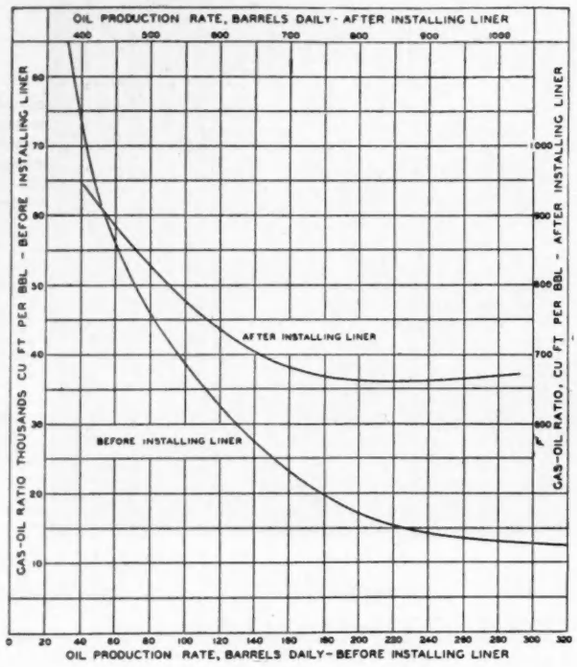

FIGURE 12
Effect of Cementing Blank Liner on Gas/Oil Ratio.

the cementing of pipe against gas sands may fail to obtain a shut-off if an ample amount of cement has not impregnated the walls of the formation at pressures overcoming the pressure of the gas itself. Cementing owes much of its merit to development of the squeeze method and of cement design in recent years. Rodessa's multiple-zone reservoir, wherein the uppermost sands produce only gas, with a gradation to deeper combination pays, and where improper completion of many of the first holes aggravates the situation, will serve briefly to exemplify well reconditioning. Test data prior to and after cementing a short string of blank casing opposite two troublesome gas sands above an oil sand at the bottom of the hole are charted in Figure 12. Attention is directed to the reduction in minimum obtainable ratio from a value drawing a 50-barrel daily allowable under the pool's proration order to one raising the quota to 225 barrels daily, while what was virtually a gas well was converted to an oil producer. Despite immediate results, cementing off the upper gas sands at Rodessa and elsewhere, to leave the lower horizons exposed, does not guarantee permanent relief in contending with gas-cap movement. Remedial work involving a cement process to exclude gas from the flow string is turning noticeably toward provisions for the future by cementing blank pipe through the entire producing interval in order to perforate and recement selectively later.

Preventive steps adopted in well completion, as in some of the deep, thin sands of the Gulf Coast area, necesarily entail special use of cement.[10] It is customary in modern high-pressure wells to set and cement the oil string through any upper gas sands. Here, too, the practice finding recent favor is that of cementing the oil string from the base of the pay section upward with the purpose of selective completion and progressive control of encroaching gas and water.

Circumstantial advantages and disadvantages, ranging from physical adaptability to over-all economy, hazards, and like considerations, are attached to both cement and packer installtions, each claiming its own adherents. Any positive shut-off procedure has as its first demand a sound mechanical seal which is proof against channeling in the hole itself. Performance of positive shut-off wells at South Burbank prompts classification into two broad groups: The first reverts conditions to the state of a relatively undepleted reservoir—i. e., to localized division of the pay rejuvenating the lower portion so as to perform in a manner generally similar to a separate formation, with rightful allowance for differences in all fluid and formation properties. The second is in effect a more intricate reservoir not fully protected from highly-gaseous strata above. Hence, the permeability features and production-control relations entailed may become very irregular. There seems to be mutual confirmation between the characteristic elevation trends discussed elsewhere in this paper and the gas/oil ratio characteristics of a reservoir interval flowing below a mechanical shut-off means. The fact should prove generic in its potentialities of application, not only to cementing or any positive exclusion method, but also to other pool cases where gas-cap expansion occurs at high pressures.

Conclusions

Mindful of the basic causes of high gas/oil ratios, and particularly of the importance of reservoir thickness, permeability, and fluid properties, these conclusions have been drawn:

1. Most flowing wells presenting a gas-control problem respond to proper testing by yielding a variety of gas/oil ratios as the rate of production is varied.

2. Selection of the most desirable production rate should be guided by a standard of pool efficiency over protracted periods. Well characteristics change with depletion and sub-surface pressure decline.

3. Production-rate regulation is actually a misnomer for differential-flow pressure adjustment, to an aspect of which all control methods must be reduced. The comparatively new and limited method of preferential acid treatment is included.

4. The gas/oil ratio control question is primarily one of preventing withdrawal of free gas from the pay formation. With high pressure and large-volume gas conditions, special flow-string equipment can of itself hardly be expected to improve gas/oil ratios.

5. When the desirable utility of other differential regulation methods has been exhausted, the next resort in controlling ratios is to shut off gaseous formations mechanically at the sand face. Where this measure does not eliminate coning action, stopcocking may prove helpful.

6. Continued gas-cap expansion normally influences the permanency of any successful control method, either remedial or preventive. They should, accordingly, be undertaken with an appreciation of future contingencies.

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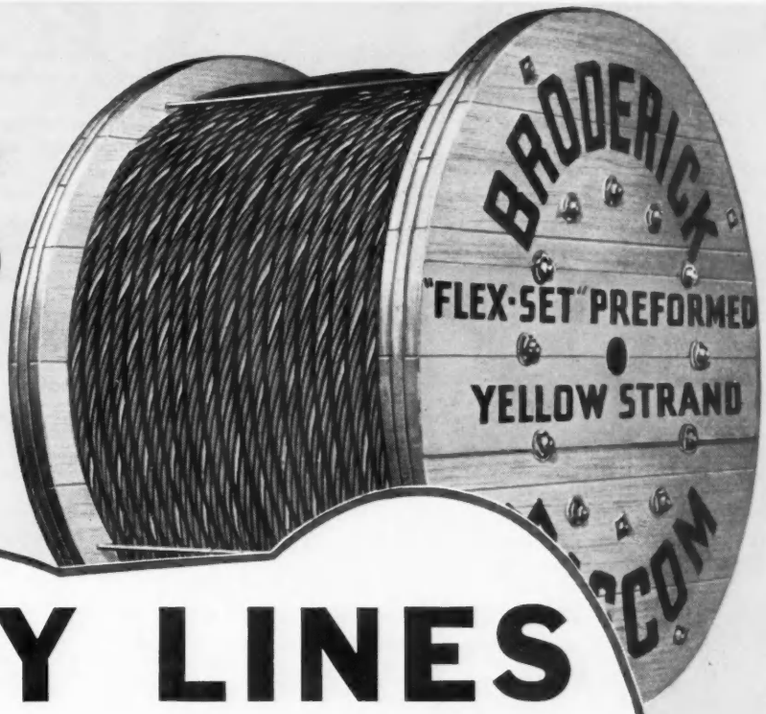
"FLEX-SET" PREFORMED YELLOW STRAND



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PRESENTED in full before the American Petroleum Institute in Chicago November 12, the first part of Coberly's paper was published in The OIL WEEKLY of November 15. It dealt with previous work along the lines indicated by the title, describing the apparatus used in the various tests and presenting numerous graphs illustrating their results.

Statements presented in the first part, and in Part II published herewith, are not to be construed as official opinions of the Institute or of The OIL WEEKLY.

SELECTION OF *Screen Openings* FOR *Unconsolidated Sands*

By C. J. COBERLY,
Kobe, Inc., Huntington Park, Calif.

PART II

POSSIBLY the best manner of picking up the thread of thought concluding Part I of "Selection of Screen Openings for Unconsolidated Sands" would be to repeat the last paragraph of that part. It read as follows:

"Most formation sands have a characteristic grading toward the extremes of the grain-size range, with a more uniform grading in the central portion of the range. A few sands show a uniform grading throughout the grain-size range. The point at which this uniformity commences is somewhat uncertain, being determined from a visual examination of the screen-analysis curve. At the coarse end of the curve it generally occurs between the 10 and 20 percentiles. For the purpose of establishing a definite degree of uniformity, it is common to use the portion of the curve between the 40 and 90 percentile as a guide, the quotient of the grain size at the 40 percentile divided by that at the 90 percentile being called the 'uniformity coefficient.' Its value ranges from 2.5 to 7.5 in ordinary cases, although values as low as 1.5 are found. Typical screen analyses are shown in Figures 8 to 13."

Formation sands may occur as ultimate particles, as consolidated sands, as cemented grain groups, or as mixtures of ultimate particles and cemented grain groups. The occurrence of sand in the condition of ultimate particles is rare. There are generally some cemented grain groups occurring with the free sand. Consolidated sands occur in a wide range of compaction, and cementation. The range of crushing strength of such sands varies from practically 0 to 3000 pounds per square inch. Cemented grain groups occur either naturally in loosely-consolidated sands, or as a result of breaking down of the face of the formation of consolidated sands. Cemented grain groups may vary in gradation during the life of the well, due to the effect of water or producing conditions. The clearance between the casing and the formation may also affect the character of the material that breaks off the wall and fills this space.

Bridging With Formation Sands

The uniformity of distribution throughout the entire grain-size range probably has some influence on the bridging characteristics of a particular sand. However, the controlling factor is generally to be found in the gradation of the coarse grains in the lower end of the curve. Examination of hundreds of samples in the adjustable slot apparatus, and comparison with their screen analysis, has established the fact that in general the bridging grain size is the grain size at the 10 percentile of the cumulative screen analysis.

Comparison of Results With Previous Work

F. G. Tickell at Stanford University investigated the screening action of a single undercut slot in a vertical plate. Sand was packed on the narrow side of the slot and arranged so that sections of the sand could be readily examined after each run to check migration of the sand particles.

With a sand of uniform grain size, Tickell found that: "if the slot width was not more than twice the diameter of the grain, no sand would be produced with the oil except with differential pressures of 1000 pounds per square inch and over, when a small amount of sand was passed. With slots wider than the above, all of the sand passed through with the oil at low pressures. With sands of a one-to-one mixture of coarse and fine grains, practically no sand came through with the oil if the slot width was equal to or less than twice the diameter of the coarse grains." The effect of smaller

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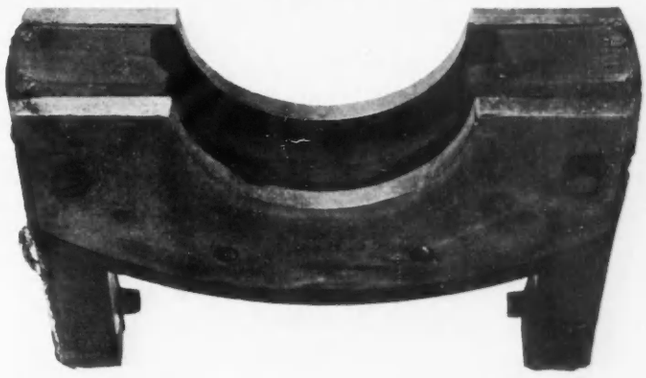

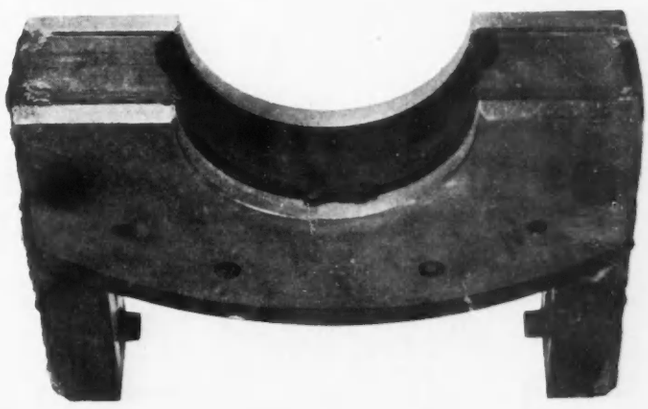

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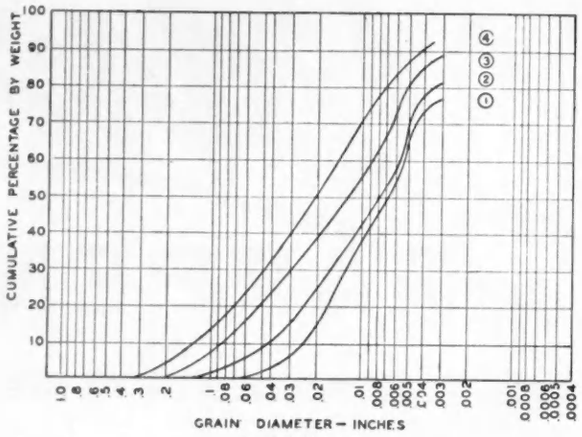

FIGURE 8

Cumulative Logarithmic Diagram of Screen Analysis, Core Sample—Huntington Beach, May 9, 1930.

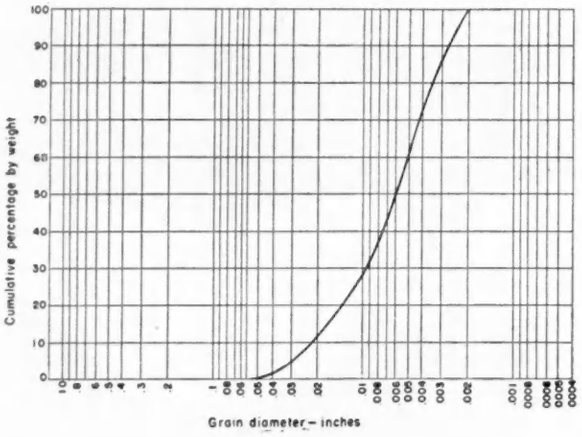

FIGURE 9

Cumulative Logarithmic Diagram of Screen Analysis, Core Sample—Carson No. 8, Dominguez Field, Union Oil Company, October 5, 1936.

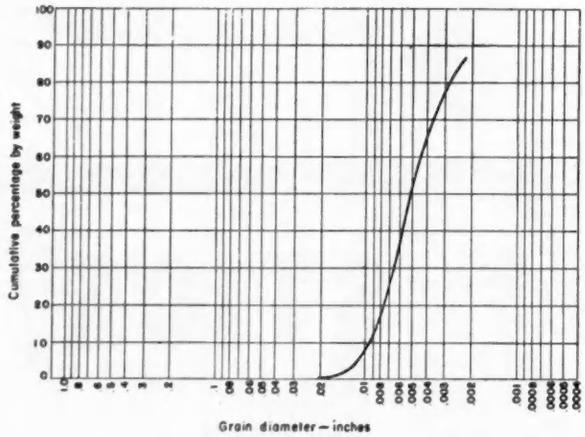

FIGURE 10

Cumulative Logarithmic Diagram of Screen Analysis, Core Sample—Balboa No. 61, Buena Vista, General Petroleum Corporation, July 22, 1936.

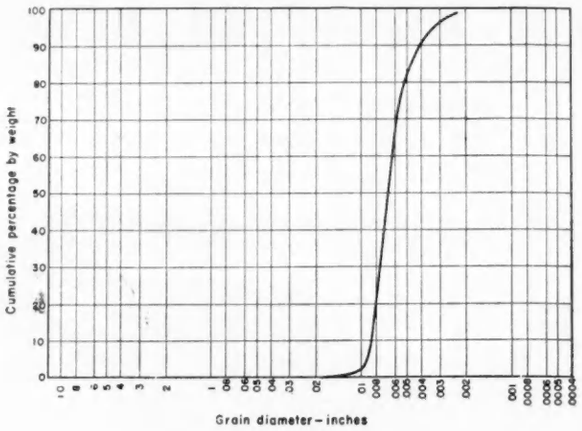

FIGURE 11

Cumulative Logarithmic Diagram of Screen Analysis, Core Sample—Brimm No. 1, Phillips Petroleum Company, December 10, 1934.

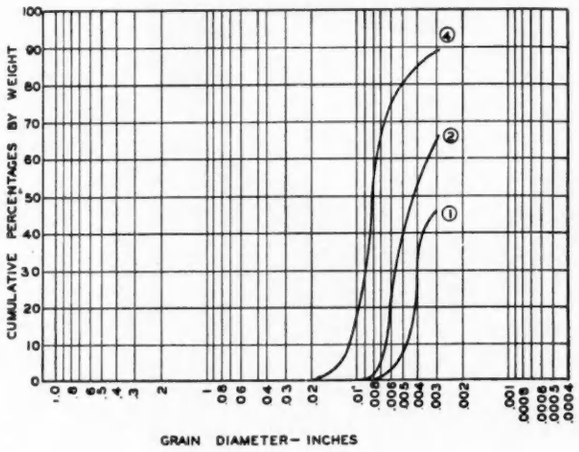

FIGURE 12

Cumulative Logarithmic Diagram of Screen Analysis, Core Sample—Kettleman Hills, May 9, 1930.

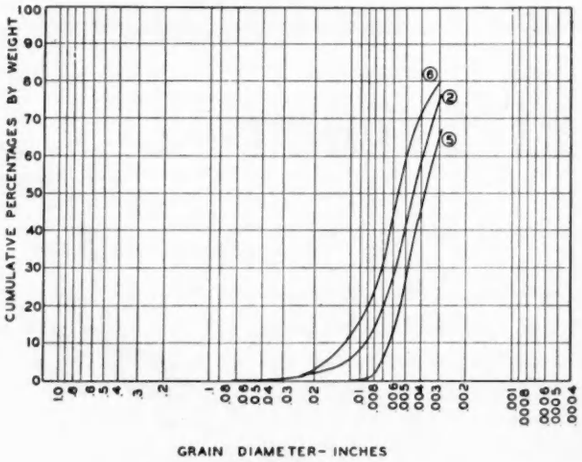

FIGURE 13

Cumulative Logarithmic Diagram of Screen Analysis, Core Sample—Santa Fe Springs, May 9, 1930.

percentages of coarse grains was not considered. This is in direct agreement with results obtained in this work.

Other investigators, notably Carr, Graser, and Wilson, have determined that the critical range for the selection of the mesh of screen casing lies below the 20 percentile.

Carr demonstrated that screen pipe will hold a sand satisfactorily after allowing a small amount of fine sand to pass when the mesh corresponds to the grain size at the 2½ percentile. On plotting the screen analyses of the sands with which Carr worked, the mesh indicated by twice the grain size at the 10 percentile would be 0.013 inch. He found a screen of 0.008- to 0.010-inch

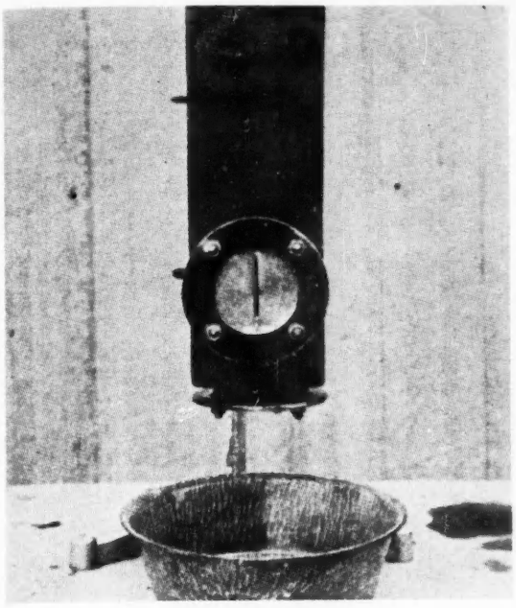

FIGURE 14
Flow of Oil and Sand through a Vertical Slot of a Width that Will Not Hold the Sand.

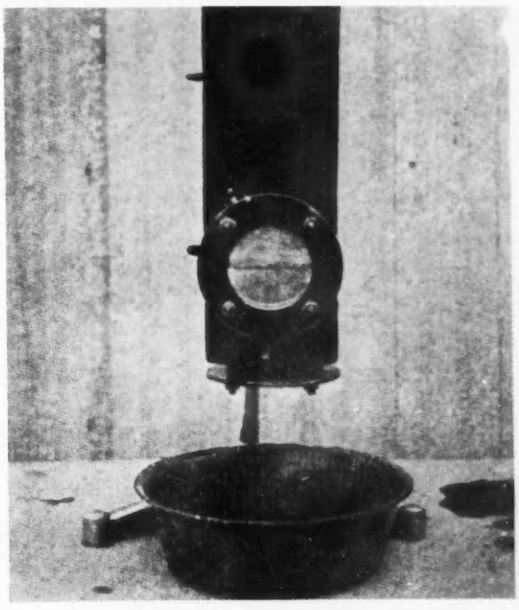

FIGURE 15
Flow of Oil and Sand through a Horizontal Slot of a Width that Will Not Hold the Sand. Same Sand and Slot as Shown in Figure 14.

mesh was satisfactory for this sand. The difference probably lies in the estimation of the amount of sand which is desirable to make before a stable bridge is formed. However, the amount of sand passed before a stable bridge forms must in all cases be such that it will not permanently enlarge the screen openings.

Graser found that a slotted opening would bridge properly if its width is less than twice the average diameter of the largest one-seventh of the grains banked against it. This result checks very well with that obtained by using twice the screen opening at the 10 percentile.

Wilson takes the critical range as the 5 to 15 percentile and, by a mathematical analysis of the curve between these two points, he establishes the critical grain size which is equal in diameter to the mesh of the screen which will hold the sand under all conditions. From the example he cites, the mesh determined is less than that found by use of the 10-percentile rule.

The effect of the position and arrangement of openings on the staiblity of bridging were determined. These points were investigated under flow conditions using the pressure apparatus shown in Figure 2. It has been shown by proper selection of the slot width and thickness in relation to the angle of repose of the sand to be placed behind the slot that a horizontal slot in a vertical plate will hold sand that the same mesh vertical slot in a vertical plate will not hold.

To illustrate the fallacy of this theory under flow conditions, a slot of such a width that dry sand would flow through when the slot was placed vertically, but was held when the slot was placed horizontally, was chosen. A 2-inch sixty-thousandths slot and —28+35 sand were used (ratio of grain to slot 3.7) with crystal oil as the fluid. The sand was placed 2⅝ inches above the center line of slot in both cases. The oil surface was maintained 2⅜ inches above the sand, making a total head of oil of 5 inches. In the case of the horizontal slot, the resulting flow was 77.5 cc. per minute, of which 36.5 cc. was sand. In the case of the vertical slot, the total

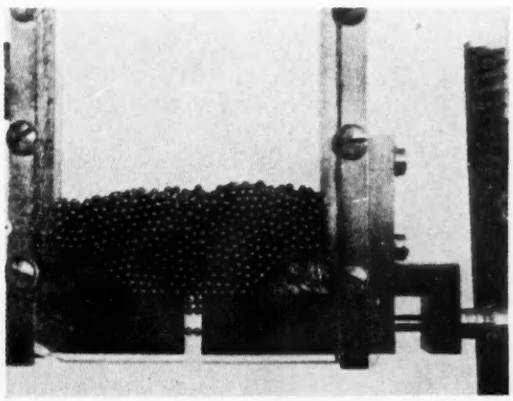

FIGURE 16
Bridge in Slot at Width of 0.1870-inch at the Top with an Undercut of 0.0008-inch. Note that This Makes the Width Almost Exactly 0.1875-inch. Where the Lower Pair of Balls Is Bridged.

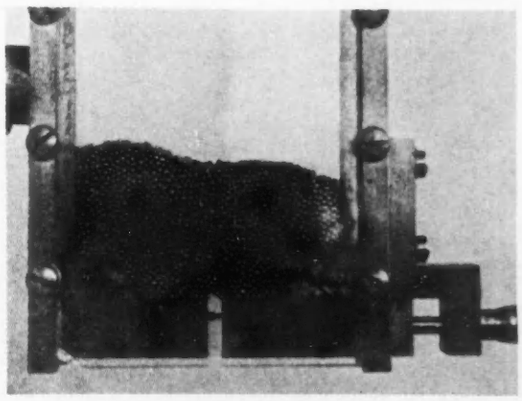

FIGURE 17
Bridging in the Slot with 1/16-inch Balls Mixed with 10 Per Cent of 3/32-inch Balls. Slot Width is 0.155-inch at the Top or 0.00125-inch Less than the Sum of the Diameters. The Undercut in this Case was 0.0008-inch.

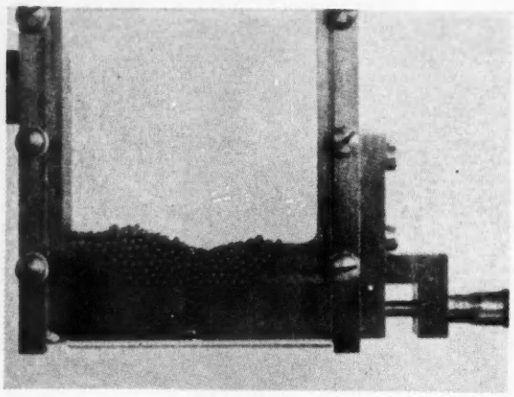

FIGURE 18

Bridging in the Slot with 3/32-inch Balls. Slot Width at Top 0.1847-inch Undercut 0.0012-inch. With Greater Undercut than this, Steel Balls Could Not be Made to Bridge in the Slot.

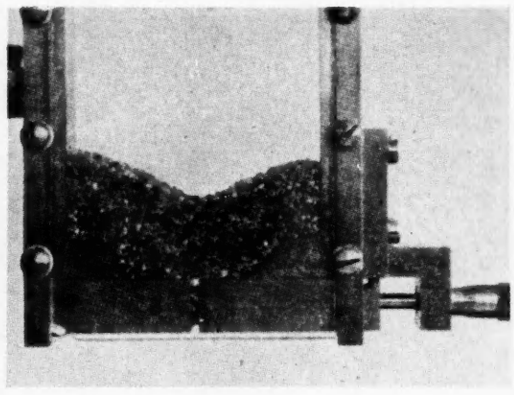

FIGURE 19

Bridging in Slot with Sand Grain —10 + 14. Undercut 0.0012-inch. Slot Width 0.090-inch at Top.

flow was 93 cc. per minute, of which 46 cc. was sand. Sand flowed through either slot with only 1/32-inch of oil above the sand. Figures 14 and 15 show the results of the test.

The following conclusions are drawn from this test:

1. Slots exceeding the maximum opening for a given sand permit the flow of sand as long as oil is flowing with the slot in either a horizontal or vertical position.

2. Vertical slots of the proper width for the sand are equally as effective as horizontal slots in holding back sand.

Slot width alone controls the bridging effect, the position of the slot being immaterial.

In conducting the slot-bridging tests it was found that there was a tendency to bridge in the slot itself, as illustrated in Figures 16 to 18. It was first thought that this was due to the slots having a slight amount of negative undercut. However, investigation showed that the slots were parallel, or in some cases slightly undercut. Further experiments showed that the greatest tendency for the slots to fill up occurred when the slot width was from 0.0015 inch to 0.002 inch less than two times the ball diameter, when using balls of one size, or from 0.0015 inch to 0.002 inch less than the sum of the ball diameters when using mixtures of two ball sizes. The undercut in Figure 18 was 0.0012 inch. With undercuts greater than this, it was not possible to make the slot fill with steel balls.

With sand grains, slots having undercuts of 0.0012 inch filled up readily, as shown in Figure 19. The results of tests with slots having greater undercuts (the amount of undercut being given in degrees) are shown in Figures 20 and 21. Sand was found to lodge in slots having undercuts up to 2 degrees. In a great number of trials no bridge was formed in slots having an undercut of 6 degrees.

A series of tests was run in the apparatus shown in Figure 2 to determine the effect of the arrangement of openings on bridging.

The procedure was to bolt the desired plate in place over the opening in the bottom, place sand to a depth of 5 inches over the plate, fill the container with oil having a viscosity of 70 sec. (Saybolt Universal) at 100°F., bolt the top in place, and apply a pressure of 100 pounds per square inch over the oil. Conditions during the ensuing flow were noted. The sand used was a beach sand made up to have the analysis shown in Figure 22.

The following slot arrangements, shown in Figure 23, were tested:

Plate No. 1—1 inch, 6 degrees included angle undercut slot.

Plate No. 2—2 inches, 6 degrees included angle undercut slot.

Plate No. 3—1 inch, 6 degrees through group of 3 slots, 13/64-inch bar between slots.

Plate No. 4—2 inches, 6 degrees through group of 3 slots, 13/64-inch bar between slots.

Plate No. 5—continuous-grid, 3/16-inch square bars, 0.100 inch apart.

Plate No. 6—wire-screen, 8-mesh, 0.096 inch openings.

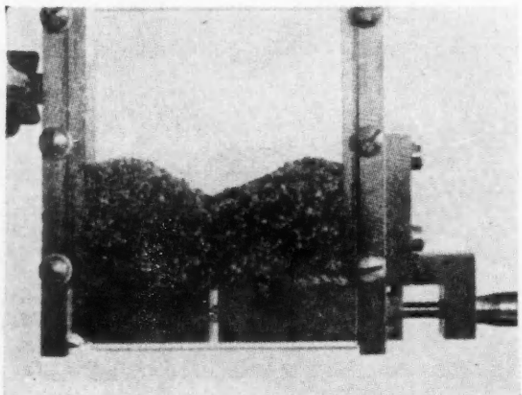

FIGURE 20

Bridging in Slot with —10 + 14 Sand. Slot Width 0.090-inch at Top. Under 2° Included Angle. Bridge Did Not Form Readily with this Undercut.

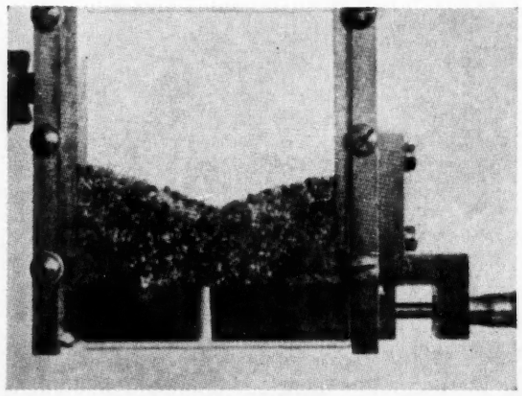

FIGURE 21

Showing Slot 0.090-inch Wide at Top with Undercut of 6° Included Angle. No Bridge was Formed in the Slot with this Undercut in a Great Number of Trials.

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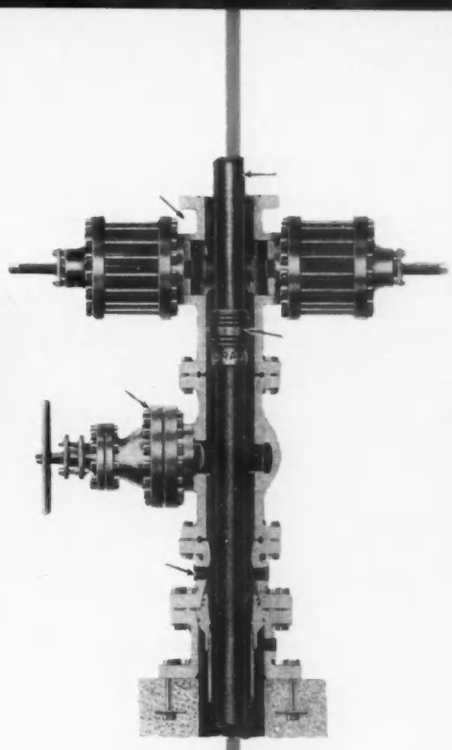
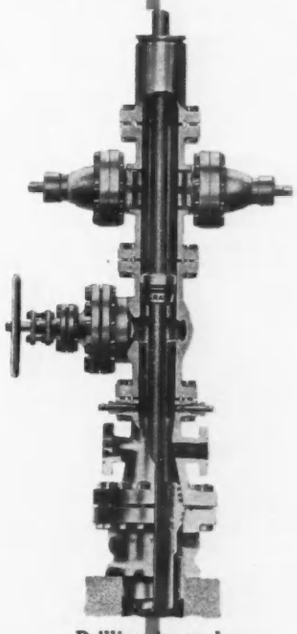
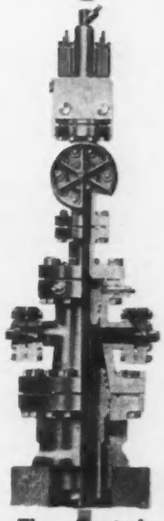


Drilling and Casing Control



Drilling-in and Completion Control



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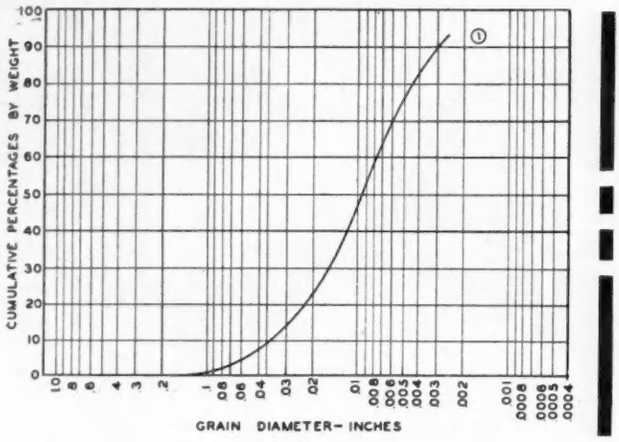

FIGURE 22
Cumulative Logarithmic Diagram of Screen Analysis, Core Sample—Venice Field, August 13, 1930.

Plate No. 7—1 No. 39 hole (0.0995 inch diameter).
Plate No. 8—group of 13 No. 39 holes (0.0995 inch diameter).

A single 1-inch slot with 6-degree undercut was used as the standard of comparison.

When plates Nos. 5 and 6 were used, the 2½-inch diameter of the side or bottom opening determined the amount of the grid or screen exposed to the sand. With the grid in place, 17¾ inches of slot was exposed.

The plate shown at the right of the top row of Figure 23 was bolted under plates Nos. 3 and 4, and a run made with this plate in position for each slot width tested. The chamfered side of this plate was placed against the slotted plate.

The slot width in plates Nos. 1 to 4 was varied from 0.040 inch to 0.120 inch by 0.020 inch steps. Results of the test were as follows:

With single 1-inch and 2-inch slots the stable slot width was 0.080 inch and the maximum was 0.120 inch, and with groups of 1-inch and 2-inch slots the stable slot width was 0.080 inch and the maximum slot width was 0.100 inch.

The maximum slot width with the plate backing the slots was 0.120 inch, but with wider than 0.080 inch the slots filled completely with sand except opposite the hole.

With the grid in place, too much sand was made before a bridge formed. This was to be expected after the results obtained with the groups of slots. Sixteen times as much sand was made as was made by the single 1-inch slot.

With the screen, only about one half as much sand was made as was made by the grid. However, approximately eight times as much sand was made before bridging occurred as was produced through a single 1-inch slot of 0.100 inch width.

Plates Nos. 7 and 8 produced a stable bridge.

The instability of the group slots parallels the observations made on the instability of the bridging of steel balls due to the continual re-arrangement of the balls above the slot. These tests show that it is important that the spacing of slots should be such that a disturbance in the bridge on one slot will not break up the bridge on an adjacent slot. The minimum slot spacing at which proper bridging action takes place was not determined.

The rules determined from tests reported in this paper apply to unconsolidated sands, and may apply to broken or semi-consolidated sands if representative samples can be obtained. With consolidated sands the slot width as determined by ultimate grain size of the formation are much narrower than those found by field experience.

A study of the degree of consolidation perhaps by means of compression tests of core samples, with the load applied both parallel and perpendicular to the bedding planes, will offer a means of correlating with field results. It is suggested that this property of the core sample be recorded along with the porosity and permeability to facilitate this study.

Conclusions

Spherical grains form stable bridges on openings larger than the diameter of the grain, the ratio being two for rectangular openings and three for circular openings.

Grain angularity and shape do not materially affect the opening size for a stable bridge, but do increase the "range of bridging."

In mixtures of two grain sizes of either spherical or angular grains, the bridging influence of the larger grain is great in relation to the amount present.

Stable bridging of typical unconsolidated oil sands occurs when the opening in the screen which retains 10 percent of the sample is taken as the diameter of the "bridging grain" and the rules for spherical grains applied.

The angle of repose of sand cannot be relied upon to produce bridging if the sand is saturated with fluid; hence, the position of slots does not affect bridging.

Undercut in excess of 2 degrees included angle is necessary to avoid clogging of the screen opening. It is desirable to avoid close spacing of slots, as it reduces the "range of bridging."

The results obtained are in reasonable agreement with those of other investigators.

The widest stable slot for broken consolidated formations can be determined from bailer samples, but cannot be relied upon because of the possible effect of water or producing conditions on the cemented grains.

The widest stable slot for well-consolidated sands cannot be determined by the methods outlined in this paper.

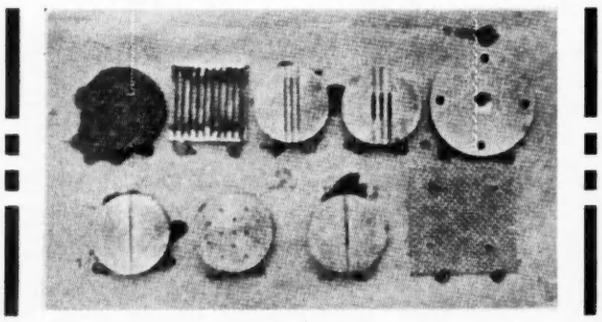

FIGURE 23
Different Types of Openings Tested in Apparatus Shown in

Acknowledgment

The author wishes to acknowledge the assistance of Mr. E. M. Wagner in the preparation of this paper.

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MEN IN THE INDUSTRY'S NEWS

JOHN W. GILLILAND, president of General American Oil Company, large producing and refining unit in the East Texas field, has announced the removal of the company's headquarters from Shreveport to Dallas, where offices are being established on the fourteenth floor of the Republic Bank Building.

JOHN A. BROWN, president of Socony-Vacuum Oil Company, accompanied by Harold F. Sheets and Arthur F. Corwin, vice presidents, spent the fore part of last week in Dallas conferring with officials of Magnolia Petroleum Company, a subsidiary.

TOM S. COX, district geologist for Plymouth Oil Company in West Texas with headquarters at Texon, has resigned to engage in consulting work. He will establish an office in San Angelo, Texas. Harry M. Nielson will succeed Cox at Texon.

D. C. ALLEN has been named registered agent of Bur-Kan Petroleum Company, an Oklahoma corporation which was admitted last week to prospect for oil and gas in Illinois. The company will maintain its state headquarters in Olney. G. E. Burgher, Tulsa, is president of the company, and H. D. Higgins, Tulsa, secretary.

ROBERT WILKINSON, Alberta oil operator, has been unanimously re-elected president of the Calgary Aero Club.

To honor father of polymerization

V. N. IPATIEFF, associate director of research for Universal Oil Products Company and one of the world's most distinguished chemists, will be honored at a special banquet of the American Chemical Society in Chicago, November 26, commemorating his seventieth birthday.

Professor Doctor Ipatieff, generally regarded as the father of polymerization, was born in Moscow, U.S.S.R., in 1867, although he is now a citizen of the United States of America. Honorary degrees have been conferred on him by the universities of Munich and Strassbourg; he is a Berthelot medalist of the French Academy of Science, and an honorary member of the German Chemical Society, as well as being a member of various American scientific societies. His chemical discoveries are numerous, one having led to appointment as a commander in the French Legion of Honor.

During the World War Ipatieff served with the rank of general in the Russian army, being in charge of all chemical work for that government. He is a member of the Russian Academy of Science in St. Petersburg and of the Academy of Science in Gottingen, as well as of the Deutsche Chemische Gesellschaft. He founded the High Pressure Research Institute of Russia, receiving for his work in connection therewith the Lenin medal.

R. C. "CAKIE" POWLESS, for eight years in the scouting department of Tide Water Associated Oil Company at the company's Tulsa offices, has been made geological scout at San Antonio.

J. R. PARKER has been named manager of Gulf Refining Company's branch office established last week at Olney, Illinois. The company's state production headquarters are located at Mattoon. Completing the Olney office staff are H. W. Galey and Fred F. Frey, lease men; H. L. Chaney and D. E. Furnall, attorneys, and Miss Grace Pinkard and Miss Martha Arvedson, stenographers.

J. E. FLANAGAN, head of The Texas Company's land department, has returned to Tulsa headquarters after a week's trip through the newly opened Illinois coal basin area.

FRED OGLESBY, former head of the Kansas land department for Shell Petroleum Corporation at Wichita, has resigned to become head of the land department there for British American Oil Producing Company. He will be succeeded by Robert H. Blakely, of Shell, at present stationed at Ardmore, Oklahoma.

ROBERT O. McKEE has been named Illinois registered agent of Fortney Oil Company, a Michigan corporation with headquarters at Mt. Pleasant, which was admitted to do business in Illinois last week. Del Fortney, Mt. Pleasant, is president, and Charles A. Floyd, Detroit, secretary, of the company which has $350,000 capital for Illinois oil development. State headquarters are being established in Flora.

FREDERICK JEROME LE FAIVRE, 53, trustee of Le Faivre Oil Syndicate, died November 12 in a Denver hospital of injuries received in an automobile accident August 28. Burial was at Casper, Wyoming. Surviving are his widow and one son.

HARRY F. CORBIN, one of the first to enter into development of the new Illinois oil fields and formerly a prominent oil and gas lease broker of Wichita, Kansas, died November 10 in Rochester, Minnesota. He is survived by his widow, one son and two daughters.

SIMON ARMAND GUIDRY, 69, known as "Pop" Guidry in Louisiana and Texas fields where he was engaged in development work for the past 20 years, died November 11 in a New Orleans hotel following an illness of several months. Among his principal holdings were interests in the Timbalier Bay and Jeanerette fields, the Leesvield field and the Lake Long field.

PROFESSOR IPATIEFF
In His Laboratory

Proration

[*Continued from page 14*]

for wells making gas/oil ratios in excess of that.

Opponents of the original order at the second hearing urged a per-well and gas/oil ratio for each well rather than a bottom-hole pressure and acreage basis, claiming that conditions in Miller County make the drilling and completion of each well practically tantamount to that of a wildcat well.

Completion of extensions of the Miller County area just south of the Arkansas-Louisiana line, has brought a new problem to Louisiana conservation officials. Operators with these borderline wells in Louisiana offsetting Miller County producers claim they should be allowed to set their production figures commensurate with wells in Miller County that are un-prorated and will be at least until December 1. Two wells on the Louisiana side are reported producing in excess of the allocations given them under Louisiana regulations.

Schuler Rules Adopted

On November 13 the Arkansas Board of Conservation adopted rules and regulations governing spacing, casing program and safety measures for the deeper drilling in the Schuler field, Union County, in line with recent recommendations of operators in that field, owning a majority of the acreage there.

Kansas field hearings

The December schedule of the conservation division of the Kansas corporation commission calls for taking potentials in the Trapp, North Trapp, Hall, Coralena, Beaver, Susank, South Susank, Sellens, Anschutz, Ochs, Dubuque, Berrick, Eichman, Karst and Batt pools, Russell and Barton counties.

Potentials established from these tests, which will start December 1, will become effective January 1.

The hearing to determine proper gas/oil ratio for the Burrton field, Reno and Harvey counties, has been postponed from November 18 to December 16, 17 and 18, at Wichita. Field tests had not been completed in time for the November date.

Schedule Texas hearings

A special hearing to consider condensate wells has been scheduled by the Texas Railroad Commission for December 6 at Austin.

The wells involved are those which produce some oil with sweet gas and whose gas/oil ratio is 100,000 to 1 or more.

There are some 300 wells in this class in Texas, and under the statute, it may be necessary to close them in. Commission officials, however, have called the hearing to determine whether there is any method available for producing the wells without wasting the gas produced with the oil.

A hearing on Mangold field in Wichita County has been set for November 30 by the commission.

A well brought in on the Charles Mangold estate has a potential in excess of 4300 barrels per day. Rules for operating this well will be considered by the commission at the hearing, as well as spacing for other producers to be drilled in the field.

Gas/oil ratio surveys during the month of November have been ordered by the Texas Railroad Commission for several fields. The Commission orders calling for the surveys provide that "the rate of production during the test shall not be less than the well's daily allowable."

The orders included the Silsbee field, Hardin County, Segno field, Polk County, North Cowden, Goldsmith, Kermit, Keystone, Penwell, South Ward, North Ward and Estes, in West Texas, and the Saxet Frio field in Nueces County.

Canada prorates again

The third proration order in two months, lowering production to 35 percent of potential, became effective in the Turner Valley field of Alberta, Canada, on November 15. It follows by only two weeks the second order which established the rate at 45 percent. The first curb on production in the year-old field was instituted September 11 and brought production to 65 percent of potential.

Potential production of the field's less than two-score crude producers is now 21,000 barrels daily. The new order applies to all wells under contract to the Imperial Oil Company, Ltd., and the British American Oil Company, Ltd., principal crude buyers, and was announced by J. H. McLeod, production manager of the former company.

Oil firm plans pensions

A lifetime retirement income plan, which would cost the company approximately $800,000 for the first year, has been planned by Phillips Petroleum Company, Bartlesville, Okla. Financed jointly by the company and workers, the plan would be extended to all salaried employes, effective January 1, 1938. The contemplated pension is based upon retroactive contribution for each employe for the time he has worked up to January 1, 1938.

According to a statement by Frank Phillips, president of the company, the plan is voluntary and depended upon acceptance by 75 percent of the employes. The retirement age was set at 65 for men and 60 for women.

East Texas

[*Continued from page 13*]

staving off the bottom-hole pressure decline. The commission has based its Sunday shutdown order on the ground that it will provide a means of more accurately checking information. However, readings at the end of this month may offer little direct comparison with those taken previously, as in the past wells have been flowing when such gauges were taken.

Receding bottom-hole pressures in the three months preceding November made the subject of pumping prospects and increase in number of wells making water an important East Texas subject also.

Artificial lifts are in use on approximately one-fifth of the completed wells in the East Texas field, according to a survey conducted by the engineering department of the Texas Railroad Commission on October 1. The detailed report was released early last week, and it lists 4747 of the 23,722 completed wells credited to the field on the above date.

The October survey reveals that 4317 wells were on the pump, and 430 additional producers were making use of air/gas lift equipment in producing their allowable of 20 barrels daily. Total of 1967 pumping wells were making water, while 123 of the air-gas lift operated wells were contributing to the water output of the field. Number of pumping wells in the field increased from 2902 to 4317 since January 1, 1937, according to the report.

Production of salt water has gained rapidly since the first of the year. Accounted for output of water from wells that adhere to their proration allowable is estimated at 75,270 barrels daily, as compared to 46,327 barrels on January 1, and 53,358 barrels on April 1. The report credits 3045 wells as being sources of water, or an average of 24.72 barrels per well daily. The average water yield per well was 21.42 barrels daily on January 1, and 20.56 barrels April 1.

Comparative figures on water production and artificial wells, based on four surveys conducted by the commission, during the 13-month period ending October 1, 1937, appear in the accompanying table.

East Texas Lifting and Water Status

	October, 1936	January, 1937	April, 1937	October, 1937
Flowing wells making water	942	1,071	1,005	1,047
Pumping wells making water	850	1,042	1,518	1,967
Pumping wells immune from water	1,619	1,860	2,145	2,350
Total pumping wells	2,469	2,902	3,663	4,317
Air and gas lift wells making water	63	71	72	123
Air and gas lift wells immune from water	222	243	286	307
Total air and gas lift wells	285	314	358	430
Wells producing Woodbine water	1,827	2,151	2,560	3,026
Wells producing water other sources	28	33	35	19
Total wells making water	1,855	2,184	2,595	3,137
Woodbine water production in barrels	42,718	46,250	53,314	75,241
Water production in barrels other sources	72	77	44	28
Total daily water withdrawal in barrels	42,790	46,327	53,358	75,270
Average daily water production per well	23.07	21.42	20.56	24.72
Total Completed wells	21,503	22,010	22,457	23,722

Remains Much Disturbed

Gasoline market grows progressively weaker with stocks so far out of line that no improvement is in prospect

THE oil industry's markets remain greatly disturbed, and no substantial improvement is in prospect.

The gasoline market has grown progressively weaker, as tank car, dealer, and retail prices have been reduced further; and the inventories of gasoline are so great as to threaten a protracted period of weak gasoline markets.

The markets for other refined products have continued to hold at the prevailing price levels, but the outlook for these other products of the industry is not as promising as in past weeks.

Kerosene and fuel oil prices remain mostly unchanged. And the demand for kerosene and lighter fuel oils is holding up well. But there has been some contraction of the demand for heavier fuel oils, probably reflecting reduced industrial activity in various lines.

Consequently, the inventories of gas and fuel oils currently show a less favorable relation to demand than in recent previous weeks.

The total stocks of gas and fuel oils November 13 aggregated 121,012,000 barrels, according to the American Petroleum Institute, which was 7.2 percent more than the supplies on hand one year previously. Despite this increase in fuel oil stocks, the inventories have not been expanded fully in proportion to the gain that has occurred, meanwhile, in fuel oil demand, which has been running this year about 16 percent greater than last year.

In the past few months, however, the industry gradually has been expanding fuel oil stocks until they have been brought fairly near to an economic relation to the existing demand.

In fact, recent developments have indicated that stocks of the heavier oils are about as large as they may be without endangering existing price structure. The lighter oils, on the other hand, are being well absorbed by the market, and some further increase in stocks might be justified.

Crude Market Holding

The pronounced weakness of the gasoline market naturally has tended to unsettle the whole market situation of the oil industry. And this general market unsteadiness has had an adverse effect on the crude oil market. Consequently, it appears that about the most that can be expected of the crude market is a continuation of present postings during the remainder of this year. Hope that this may occur is based on the fact that the strict regulation of crude production is in prospect until the end of the year. Beyond that time, the outlook for the crude market appears highly conjectural.

Furthermore, it is even doubted in some quarters that present crude oil postings are assured of remaining in effect for the rest of this year. Such doubt is based largely on the extreme weakness of the gasoline market. For many refiners are complaining that they cannot operate profitably in turning out gasoline at their plants at present low prices, while at the same time paying the old prices for crude oil.

On the other hand, those who take a more optimistic viewpoint, and who believe that crude prices are not in immediate danger, base their opinion largely on the strict control of crude oil production which now prevails and which is expected to continue until the end of the year.

Crude Control Strict

It now appears assured that crude oil production will be held in close conformity with market demand until the end of this year. For Texas probably will achieve such a balance between supply and demand under the strict allowables that are contemplated; and most of the other leading producing states may be expected to continue to achieve fairly satisfactory regulation of production.

In view of the present and prospective regulation of production, it is indicated that crude oil stocks will be about stationary for both November and December. In fact, it seems possible that some crude oil may be withdrawn from storage within those months.

In the meantime, the inventories of crude oil remain conducive to firm markets. The present stocks of crude oil are only about 5.5 percent greater than those on hand a year ago, while the demand for petroleum has been running this year around 11 percent greater than last year. Thus, in terms of days' supply at prevailing rates of consumption, the present stocks of crude oil are somewhat smaller than those on hand a year ago.

Consequently, the crude oil market is bolstered at present both by the balance between current output and current demand and by the moderate inventories.

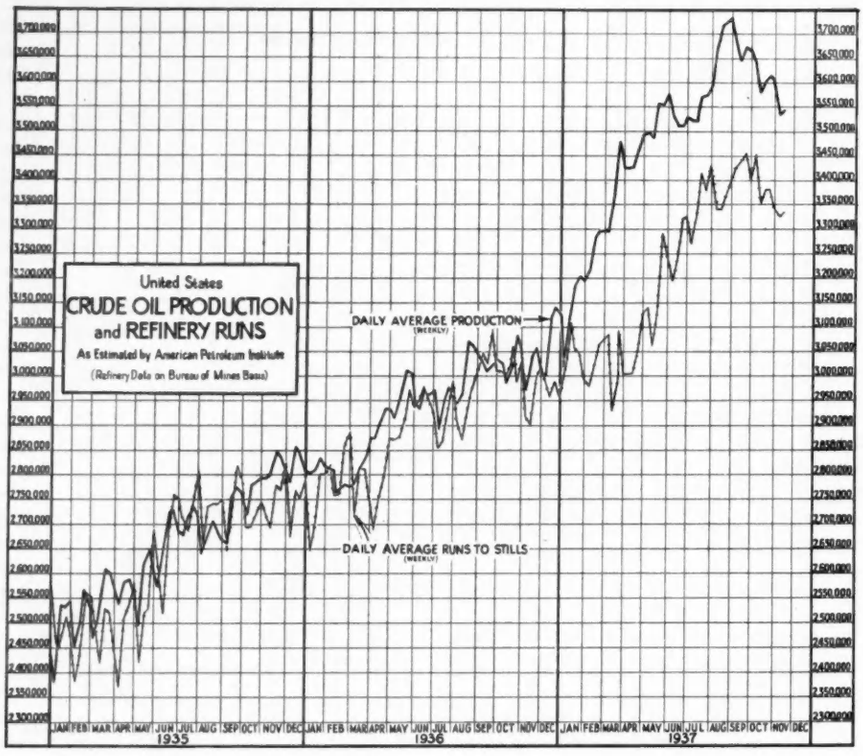
Continued difficulties in the gasoline market are threatened because of these two important circumstances: (1) gasoline inventories are greater than mar-

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)†
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	*83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 6	3,533,150	3,325,000	307,224,000	67,271,000	120,925,000
November 13, 1937	3,541,450	3,335,000	.....	67,035,000	121,012,000
November 14, 1936	3,040,400	2,900,000	†290,194,000	57,584,000	112,841,000
Change in past year	+16.5%	+15.0%	+5.9%	+16.4%	+7.2%

* All time peak.
† Stocks November 7, 1936.



ket conditions justify, and (2) it is doubtful if the industry, within the near future, will be able to achieve a better relation between gasoline stocks and the market demand.

The present surplus stocks represent the penalty for failure of the industry to hold gasoline output at the refineries within economic limits during most of this year. The excessive stocks also reflect, perhaps, some recent tapering off of gasoline consumption. Furthermore, the surplus stocks reflect the difficulties that arise each fall and winter in satisfying heavy demand for fuel oils and in holding gasoline output, meanwhile, at moderate levels. This latter problem has been solved to some extent by reducing the yield of gasoline per barrel of crude oil at the refineries; but such action has not fully solved the problem.

Improvement Not in Sight

These factors that have contributed to the creation of the present unfavorable inventory situation similarly will tend to make difficult the correction of the excessive gasoline stocks. The reduction in domestic demand for gasoline has been compensated to a great extent by increased export business. Nevertheless, the declining domestic consumption naturally has had an adverse psychological effect. Furthermore, the export business cannot be relied upon to continue. This demand situation naturally does not give much hope for an early correction of the excessive gasoline inventories.

Similarly, very little hope can be generated regarding the prospect for holding gasoline production down properly in coming months, when the requirements for fuel oil will be seasonally heavy.

Gasoline Prices Off Further

The wholesale gasoline market last week lost additional ground and there was further deterioration of the retail gasoline market.

Early in the week, the Standard Oil Company of New Jersey and its subsidiary, Standard Oil Company of Louisiana, reduced consumer tank car, dealer, and service station prices ¾-cent a gallon throughout their marketing districts, except where prices were sub-normal. States that were involved included New Jersey, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Louisiana, Arkansas, and Tennessee.

Refinery Prices Lower

Within the past week, there have been further reductions of gasoline tank car prices at Mid-Continent refineries. These additional declines have varied from ⅛ of a cent a gallon upward. The largest decline occurred in the Chicago market. In that district, third grade gasoline could be purchased late last week for as little as 4 cents a gallon. In the Oklahoma-Kansas market, the minimum price on third grade gasoline was 4⅛ cents a gallon. These minimum prices for third grade gasoline at the Mid-Continent refineries are a full 1 cent a gallon, or about 20 percent, lower than the prices in effect at the beginning of October.

Tank car prices at Mid-Continent refineries late last week were generally

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields is shown on page 50 in the issue of November 1. This schedule will appear only in the first issue of each month.

Summary of Wells Completed in the United States Week Ending November 20, 1937

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1937	Total this Date, 1936
Alabama	.....	.....	.....	.....	.....	1	2
Arkansas	3	3	.....	.....	950	123	81
California	20	18	2	.....	3,925	1,327	1,002
Colorado	1	.....	.....	1	.....	18	16
Florida	.....	.....	.....	.....	.....	1	2
Illinois	7	6	.....	1	2,350	302	4
Indiana	.....	.....	.....	.....	.....	122	160
Kansas	66	48	4	14	61,650	2,440	1,501
Kentucky	34	12	12	10	501	478	240
Louisiana	41	18	12	11	8,123	895	914
Michigan	23	14	1	8	5,535	859	696
Mississippi	.....	.....	.....	.....	.....	14	8
Montana	3	3	.....	.....	116	187	176
Nebraska	.....	.....	.....	.....	.....	.....	1
New Mexico	21	20	.....	1	15,225	624	512
New York	.....	.....	.....	.....	.....	21	.....
Ohio	41	17	13	11	295	1,339	1,722
Oklahoma	59	33	2	15	14,008	2,684	2,584
Pennsylvania	5	1	4	.....	1	183	.....
Texas	282	228	8	46	371,338	13,661	11,271
Utah	.....	.....	.....	.....	.....	.....	.....
West Virginia	35	6	28	1	46	860	548
Wyoming	1	1	.....	.....	850	97	85
Total this week	633	428	86	119	484,913	26,230	21,525
Total last week	572	419	43	110	497,291	.....	.....
Total this year	26,230	18,260	2,229	5,741	21,986,214	.....	.....

Comparison of Permits Granted for New Wells

STATE	Week Ending Nov. 20	Total this Mo.	Total this Year	Total this Date Last Year	1936 Year Total
Arkansas	3	16	229	87	103
California	33	110	1,442	944	1,054
Louisiana	17	65	1,133	999	1,107
Kansas	46	129	2,491	1,634	1,873
Michigan	18	58	886	668	762
Oklahoma	48	158	2,514	2,571	2,594
Texas	157	769	15,767	13,378	15,582
Total	322	1,305	24,462	20,281	23,075

Output Up Again

Increase of 24,300 barrels, normally small, looms big in face of determined effort to reduce production at this time

UNITED STATES crude oil production showed a relatively big increase of 24,300 barrels in the week ended November 20, having averaged 3,565,325 barrels daily. That was 56,225 barrels more than the average daily output estimated by the Bureau of Mines as required by the market during November.

The substantial increase over the previous week resulted from gains in Oklahoma, Louisiana and California, that more than offset comparatively slight declines in Texas and Kansas.

Oklahoma last week averaged 590,025 barrels daily, which was 33,450 barrels a day more than in the previous week, 7975 less than the Bureau of Mines recommendation and 15,025 barrels a day more than the state allowable.

Louisiana output was up 7675 barrels at 245,175 barrels daily, having been 1025 barrels below the Bureau of Mines estimate and 7975 below the allowable prescribed by the state.

California had a gain of 12,000 barrels, averaging 714,000 barrels daily, which was 39,400 barrels a day more than the federal allocation and the recommendation of the Central Committee of California Oil Producers.

Texas output was down 13,400 barrels at 1,422,000 barrels daily, exceeding the Bureau of Mines estimate 8700 barrels and the state allowable 70,323 barrels a day.

Kansas last week averaged 178,950 barrels daily, or 14,350 less than in the previous week. That was 10,750 barrels a day below the estimated demand and 1265 barrels less than the state allowable.

⅛ cent a gallon lower than in the previous week.

U. S. Motor gasoline ranged in the Oklahoma market about as follows: 62 octane and below, 4⅛ to 4½ cents a gallon: 63 to 66 octane, 4½ to 4⅞ cents; 67 to 69 octane, 4⅞ to 5¼ cents; and 70 to 72 octane, 5¼ to 5½ cents.

Prices in the Chicago market ranged as follows: 62 octane and below 4 to 4½ cents; 63 to 67 octane, 4¼ to 5 cents; and 68 to 70 octane, 4⅞ to 5½ cents.

At East Texas refineries the most common product, 60-62, 400 end point gasoline, was priced from 4⅜ to 4⅝ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4 to 4¼ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅜ cents for the 42-44 water white grade. Corresponding prices in the Chicago market were: 4 to 4¼ cents and 4⅛ to 4⅜ cents.

MARSHALL L. STIRLING, sales engineer for the Gas Lift Corporation, Dallas, has been promoted to sales manager.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Nov.)	State Allowable in November	BARRELS DAILY FOR WEEK ENDING November 20	November 13
TEXAS—				
Texas Panhandle	.....	.....	73,200	73,800
North Texas	.....	.....	73,800	73,100
West Central Texas	.....	.....	34,700	34,700
West Texas	.....	.....	198,600	207,400
East Central Texas	.....	.....	109,700	110,200
East Texas Field	.....	.....	484,600	484,100
South Texas	.....	.....	249,800	250,300
Texas Gulf Coast	.....	.....	197,600	201,800
Total Texas	1,413,300	1,351,677	1,422,000	1,435,400
CALIFORNIA—				
Long Beach	.....	.....	58,000	58,000
Santa Fe Springs	.....	.....	41,500	41,500
Huntington Beach	.....	.....	39,000	38,500
Dominguez	.....	.....	29,000	29,500
Inglewood	.....	.....	16,000	16,000
Ventura Avenue	.....	.....	38,000	38,000
Seal Beach	.....	.....	9,000	8,900
Midway-Sunset	.....	.....	74,000	74,500
Elwood	.....	.....	8,000	8,300
Kettleman Hills	.....	.....	83,500	81,000
Mountain View	.....	.....	16,500	16,500
Playa del Rey	.....	.....	8,000	8,000
Wilmington	.....	.....	60,500	60,000
Others	.....	.....	233,000	223,300
Total California	674,600	*674,600	714,000	702,000
OKLAHOMA—				
Oklahoma City	.....	.....	148,900	114,050
Seminole Area	.....	.....	111,475	110,100
Crescent	.....	.....	7,550	8,150
Lucien	.....	.....	13,650	13,975
Fitts	.....	.....	80,850	79,425
Edmund	.....	.....	11,500	12,300
Moore	.....	.....	9,400	9,750
Others	.....	.....	206,700	208,825
Total Oklahoma	598,000	575,000	590,025	556,575
LOUISIANA—				
North Louisiana	.....	.....	75,075	70,100
South Louisiana	.....	.....	170,100	167,400
Total Louisiana	246,200	253,150	145,175	237,500
KANSAS—				
Ritz-Canton	.....	.....	5,100	4,825
Chase	.....	.....	6,700	8,025
Hollow-Nikkel	.....	.....	2,600	2,475
Sedgwick	.....	.....	3,925	3,625
Burrton-Haven	.....	.....	10,225	13,725
Lorraine	.....	.....	3,000	3,625
Russell County	.....	.....	34,600	34,850
Silica-Isern	.....	.....	12,500	17,175
Others	.....	.....	100,275	104,975
Total Kansas	189,700	180,215	178,950	193,300
NEW MEXICO	104,800	104,800	104,700	104,700
MICHIGAN	47,400	.....	56,100	54,900
ARKANSAS	33,100	.....	46,075	44,150
MOUNTAIN STATES—				
Wyoming	56,300	.....	54,300	56,800
Montana	17,100	.....	15,200	17,800
Colorado	4,500	.....	4,200	4,200
Total Rocky Mountain States	77,900	.....	73,700	78,800
EASTERN STATES—				
Pennsylvania Grade	.....	.....	77,600	76,800
Southern Illinois (New Pools)	.....	.....	18,500	18,500
Illinois-Indiana (Old Pools)	.....	.....	16,200	16,100
Others, Eastern	.....	.....	22,300	22,300
Total Eastern States	124,000	.....	134,600	133,700
Total United States	3,509,000	.....	3,565,325	3,541,025

* Recommendation of Central Committee of California Oil Producers.

IN THE

Financial Field

More third-quarter reports show earnings increase.

* * *

Dividends announced by number of companies.

MOST of the oil companies that issue quarterly reports already have reported on their operations in the third quarter of the year, although some of these reports have only lately become available.

Recent developments in the financial fields also have included announcements of dividends by various companies.

Amerada Corporation

Amerada Corporation for the first nine months of this year reported profit of $1,673,880, compared with $1,405,632, in the similar period last year. For the September quarter the company showed a net profit of $603,773, compared with $475,336 in the similar period of 1936.

The Barber Company, formerly General Asphalt Company, has been showing this year about three times as heavy earnings as last year. In the first nine months of 1937, the company showed net profit of $629,649, compared with $218,605 for the similar period last year. For the three months ended September 30, 1937, profit was $226,855, compared with $147,038 in the September quarter of 1936.

Barnsdall Oil Company

Barnsdall Oil Company's earnings are running this year about 25 percent greater than last year. In the nine months ended September 30 this year, the company reported net profit of $2,232,694, compared with $1,719,584 in the similar period last year. For the third quarter indicated profit was $976,364, compared with $509,690 in the September quarter last year.

Cities Service

Cities Service Company and subsidiaries have reported for the first nine months of 1937 net income of $5,283,526, after subsidiary preferred dividends and other charges, compared with net income of $3,939,202 in the similar period last year.

Colonial Beacon

Colonial Beacon Oil Company, controlled by Standard Oil Company of New Jersey, has reported for the first nine months of 1937 a net loss of $727,763, compared with a net loss of $1,987,703 in the similar period last year. For the third quarter of this year, the company showed net profit of $144,373, compared with a net loss of $625,847 in the September quarter of 1936.

Continental Oil Company

Continental Oil Company apparently will set a new record of earnings this year. Already in the first nine months of 1937, the company has earned about 20 percent more than in all of 1936, which was the previous record year for the company. In this year's first nine months, the company earned $11,614,575, or 43 percent more than the $8,083,624 earned in the similar period last year.

In the third quarter of this year, the Continental company reported net profit of $3,730,045, compared with $3,727,357 in the September quarter last year.

Derby Oil and Refining

Derby Oil and Refining Corporation has reported for the first nine months of 1937 a net profit of $435,677, which was nearly twice as much as the $232,60 earned in the similar period last year. In the third quarter this year, profit was $37,021, compared with $27,120 in the similar period of 1936.

Lone Star Gas

Lone Star Gas Corporation has reported for the third quarter of this year a net profit of $4,548,084, compared with $4,361,603 in the similar period last year.

Louisiana Land

Louisiana Land and Exploration Company has reported for the third quarter of 1937 a net profit of $518,600, compared with $553,427 earned in the September quarter last year. For the first nine months of 1937, indicated profit is $1,527,200, compared with $1,464,127 for the similar period of 1936.

Mid-Continent Petroleum

Although Mid-Continent Petroleum Corporation showed greater profit in the first nine months of this year than in the similar period last year, the company in the September quarter did not equal its record of the corresponding period last year. For the nine months ended September 30 this year, profit was $4,605,879, compared with $4,198,678 for the similar period last year. In the third quarter this year, the company showed net profit of $1,512,118, compared with $1,784,410 in the September quarter last year.

Ohio Oil Company

The Ohio Oil Company has had considerably better earnings this year than last year, having reported that net profit for the first nine months of this year was $10,315,011, compared with $6,212,981 in the similar period last year. For the third quarter this year, profit was $3,592,654, compared with $1,736,417 in the similar period last year.

Pacific Western Oil

Pacific Western Oil Corporation reported for the first nine months of 1937 net profit of $1,232,249, compared with $913,279 in the similar period last year. For the third quarter this year, profit was $229,951, compared with $270,158 in the similar period last year.

Panhandle Producing

Panhandle Producing and Refining Company has been doing considerably better this year than last year. For the first nine months of 1937, the company reported net profit of $227,887, which was more than twice as much as the profit of $105,131, earned in the similar period of 1936. For this year's third quarter profit was $91,211, compared with $24,351 in the similar period last year.

Pierce Petroleum

Pierce Petroleum Corporation has reported for the quarter ended September 30 this year a profit of $26,888, after expenses, taxes, etc., compared with $73,031 in the third quarter last year.

Pure Oil Company

Pure Oil Company has had nearly twice as much profit this year as last year. The company has announced that for the first nine months of 1937 its profit was in excess of $9,000,000 after all charges, as compared with $4,800,000 for the corresponding period of 1936.

Pure Oil Company declared a dividend of 25 cents a share on the common stock, which represents a resumption of payments on the common stock after a lapse of over seven years, being the first payment since September 1, 1930, when 37½ cents a share was paid.

Quaker State Oil

Quaker State Oil Refining Corporation reported for the first nine months of 1937 net income of $1,052,291, reflecting improvement over the $857,218 earned in the similar period of 1936. For the third quarter of 1937, net income was $172,731, compared with $305,159 earned in the September quarter last year.

Republic Petroleum Company

Republic Petroleum Company, from Los Angeles, California, has reported that for the first nine months of 1937, its net profit was $202,940, compared with net profit of $120,029 in the first nine months of 1936.

Seaboard Oil

Seaboard Oil Company of Delaware has reported for the first nine months of 1937 net profit of $1,782,382, compared with $1,837,276 for the similar period last year. Net profit for the third quarter of 1937 was $552,164, compared with $611,068 in the September quarter last year.

Skelly Oil Company

Skelly Oil Company is setting a new record in earnings this year. For the first nine months of 1937, its net profit was $5,346,940, or 52 percent more than the $3,511,431 for the similar period last year. For the third quarter this year, profit was $1,911,022, compared with $1,307,595 in the September quarter last year.

Standard of California

Standard Oil Company of California has declared dividends amounting to 80 cents a share, consisting of a regular dividend of 25 cents and an extra or 55 cents, payable December 15, to stockholders of record November 15. This action brings total dividends for the year to $2. In all of 1936 payments totaled $1.20.

Earnings of Standard of California for the third quarter of 1937 amounted to $13,355,627, after usual deductions, equivalent to $1.02 a share, compared with

† "COMBAT"—by Charles M. Russell

Combat

One word, but it sings the saga of life—the story of nations—of people—and of industry. Nations war for territory—for supremacy—companies combat to hold today's business—to build new. ☆ To the winner belong the fruits of victory, but the winner must be strong, wise and experienced. Manufacturers have learned that in industrial competition—research, engineering, design and manufacturing perfection are weapons of the winner. They have learned that with these company attributes products are fabricated that in themselves combat the destructive efforts of Nature and of Man. ☆ Axelson Pumps and Sucker Rods are such products. ☆ Axelson Manufacturing Company, P. O. Box 98, Vernon Station, Los Angeles. St. Louis. 50 Church Street, New York. Tulsa. Mid-Continent and Eastern Distributor: Frick-Reid Supply Corporation. Rocky Mountain Distributor: Great Northern Tool & Supply Co.

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† *Charles M. Russell—a great artist of a great country. He knew and loved the creatures of the West. His rare ability to portray an accurate and artistic record of the lives of Western wild life is shown in this bronze of the two "Big Horns" in deadly combat. He caught all the power of this battle to the death and immortalized it in bronze. This is the first time that permission has been granted for reproduction of this bronze. A reproduction of this picture, suitable for framing, is available upon request.*

AXELSON PUMPS AND SUCKER RODS

$7,685,528, or 58 cents a share, in the third quarter of last year. For the first nine months of this year the company earned $31,135,818, or $2.38 a share, compared with $16,665,074, or $1.27 a share in the similar period last year.

Sunray Oil Corporation

Sunray Oil Corporation reported for the first nine months of 1937 a net income of $844,490, compared with $401,014 in last year's similar period.

Texas Gulf Producing

Texas Gulf Producing Company, oil producing company of the Gulf Coast, will pay a dividend of 10 cents a share December 23 to stockholders of record November 19. It paid 5 cents a share December 15, 1936. The company's earnings have been somewhat better this year than last net profit in the first nine months this year having amounted to $718,653 after usual deductions except federal taxes, compared with $659,510 in the similar period last year.

Texas Pacific

Texas Pacific Coal and Oil Company reported for the first nine months of 1937 net profit of $715,548, which was not far short of a 50 percent gain over the similar period last year, when profit was $466,553. The company also did better in the September quarter this year than in that period last year, showing profit of $260,042, compared with $168,270 in the September quarter last year.

Wilcox Oil and Gas

H. F. Wilcox Oil & Gas Company showed for the first nine months of 1937 a net profit of $75,241, compared with $86,533 in the similar period last year. For the third quarter of 1937, profit was $13,558, compared with $4,269 in the September quarter last year.

Dividends Voted

Humble Oil & Refining Company directors have declared a dividend of 62½ cents a share on the company's stock, payable December 27 to stockholders of record November 27, bringing the total payments for the year up to $2 a share. The company paid 62½ cents three months ago and 37½ cents in each of the first two quarters of the year.

Ohio Oil Company has voted a dividend of 50 cents a share on the common stock, which is the same as the payment made June 15.

Simms Petroleum Company has declared a further dividend in liquidation of 75 cents per share, payable November 3 to stockholders of record at the close of business, October 25, 1937.

Socony-Vacuum Oil Company has declared a special dividend of 30 cents a common share, payable December 15 to stock of record November 18. Previous payments this year were 25 cents each on September 15 and March 15, bringing total disbursements in 1937 to date to 80 cents a share, compared with 70 cents in the full year 1936.

Directors of Standard Oil Company of Indiana have declared the regular cash dividend of 25 cents a share on the company's capital stock, plus an extra cash dividend of 75 cents a share, making a total of $1 per share. The dividend is to be paid December 15 to stockholders of record November 15. This payment brings total disbursements for the year, so far, to $2.30 a share. In 1936 the company paid a total of $2.40 a share.

Mission Buys Stocks

Mission Corporation, which is solely a holding company, is reported to have made substantial additions to its holdings of various oil company stocks in recent weeks.

The recent purchase of about 60,000 shares of Tide Water Associated Oil Company common stock increased Mission's holdings in that company to about 940,000 shares. Meanwhile, the purchase of about 4500 shares increased Mission's holdings in Skelly Oil Company to about 562,000 shares. The Mission Corporation also recently was reported to have purchased about 5000 shares of Pacific Western Oil Corporation and about 13,000 shares of Mission Corporation, its own stock.

The largest stockholder in Mission Corporation is Pacific Western Oil Corporation, which owns about 642,000 shares, or about 46 percent, of the Mission stock.

United Gas Changes

The United Gas Corporation, which is a subsidiary of Electric Power and Light Corporation, has absorbed its subsidiary, the United Gas Public Service Corporation, thereby completing a program of corporate simplification that was started several years ago. The simplification has resulted in the elimination of about 40 subsidiary companies.

Operations of the United Gas System now are handled by the United Gas Corporation itself and seven subsidiaries. Each company has charge of a particular phase of the system's functions.

The United Gas Corporation, the parent concern, controls the various subsidiaries and also handles the distribution activities. Union Production Company now handles oil and gas production and development. United Gas Pipe Line Company is in charge of the transmission of natural gas. United Oil Pipe Line Company handles the transportation of oils.

Oil in the Courts

[*Continued from page 16*]

gas was adulterated with 7 to 9 percent of inert flue gas or smoke.

Gossler is among 14 officers of the companies who have been made defendants in the action. Besides Columbia Gas & Electric, companies named are: Columbia Oil & Gas Corporation, of Wilmington, Delaware; Ohio Fuel Gas Company, of Columbus, Ohio; Preston Oil Company, of Columbus; Northwestern Ohio Natural Gas Company of Columbus; Cincinnati Gas & Electric Company, of Cincinnati, and the Dayton Power & Light Company, of Dayton.

The Preston company, it is charged, bought gas from Columbia subsidiaries, burned the gas in the process of extracting gasoline and then sold the burned inert gas back to Columbia subsidiaries to be mixed with natural gas and sold to consumers as natural gas. In the process of burning, it is claimed that each cubic foot of natural gas increased to about seven cubic feet of inert, unburnable gas, and that the Preston company was paid originally at the rate of 35 cents per 1000 cubic feet for this inert gas which it obtained from natural gas that was purchased for only 20 cents per 1000 cubic feet. It is charged that the amount paid for the alleged inert gas was later reduced to 16½ cents per 1000 cubic feet.

Meanwhile, a separate grand jury investigation was launched Thursday (November 18) by Franklin County Prosecutor Ralph J. Bartlett at Columbus who, at the time the damage suit was announced, said he was "interested in knowing just how long certain people have had possession of facts set forth in this petition and failed to bring it to the attention of the law enforcement officers of this county and the state of Ohio." The county attorney also said, "I cannot help but wonder why the city attorney" has "seen fit to file a private law suit, which if successful, will entitle him to vast private allowances as attorney fees in this case."

Among those subpoenaed for the grand jury investigation were officers of the Preston company and the Ohio Fuel Gas Company. Records of the two companies were also demanded, and additional testimony was to be given by J. Paul Blundon, Keyser, W. Va., gas engineer hired by Bartlett as an expert, and Louis F. Dabe, engineer for the Ohio Public Utilities Commission.

Prison term for tender forgery

The first decision by an appellate court involving criminal penalties in the tender law was handed down last week by the Court of Criminal Appeals at Austin.

The court sustained the conviction of M. D. Carter, a former employee of the Texas Railroad Commission, who had been sentenced to two years in prison for conspiracy to commit a forgery. The oil involved was moved from the Conroe field in Montgomery County.

Carter's attorney contended that the statute, which carries a felony penalty for forgery of tenders, was invalid, but the court found that this was not true. The court held also that the legislative act placing the enforcement power in the railroad commission was not an improper delegation of authority and that the authority delegated to the railroad commission was administrative and not legislative as the defendants contended.

Teapot Dome closed

Final disposition of the government's "Teapot Dome" case against Pan American Petroleum Company and the estate of Edward L. Dohney was formally reported to the Secretary of the Navy November 19 by Rear Admiral G. J. Rowcliff, judge advocate general.

Reporting the activities of his office during the past fiscal year, Admiral Rowcliff announced that "concerning the judgment in favor of the United States in the amount of $9,277,666.17 in the case of United States vs. Pan American Petroleum Company, a final compromise payment in the sum of five million dollars was made by the estate of Edward L. Dohney on behalf of Pan American Petroleum Company to close the transaction. This disposes of the suits against the Pan American Petroleum Company and the estate of Edward L. Dohney."

It was also reported that approximately $3,988,000 was collected during the year from private interests in connection with the use of government lands under the control and jurisdic-

[*Continued on page 58*]

Fig. 1740 Gaso Duplex Piston Timken Bearing Power Pump, 54 to 250 Bbls.

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WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Contemplate Pipe Line

Turner Valley potential to reach 25,000 barrels soon; additional activity assured on Taber structure.

WITH the potential yield of the Turner Valley field of Alberta, Canada, certain to reach and probably exceed 25,000 barrels daily before the first of the year, proposals for construction of a new pipe line to move the crude from the field and possible construction of a new refinery are receiving the attention of majors and independents.

Rapid and successful development of the year-old field last week brought the third proration order, throttling production of wells yielding more than 100 barrels daily to 35 percent of their potential. The total potential of present wells is in excess of 21,000 barrels daily, while pipe line facilities to Calgary, 50 miles away, can handle only 10,000 barrels. A loop now being constructed for the line, scheduled for completion by January 1, will increase the line's carrying capacity by 300 to 400 barrels daily.

At present, the line to Calgary provides the only outlet for Turner Valley operators. Proposals for a cooperative line to High River, 14 miles from the field, which will offer a rail outlet to refineries in neighboring provinces, are receiving increasing support by independents. The project would cost an estimated $200,000.

Two major companies are reported contemplating construction of a new refinery, either at Calgary or High River. Benefit of such a project, however, would not be felt by Valley operators for many months, and an immediate announcement of a projected refinery would probably not discourage plans now being discussed for the line to High River.

Tariff Important

Operators are looking toward refinery markets in adjoining Manitoba and Saskatchewan, as well as eastern British Columbia, hoping that a Dominion tariff board inquiry to be started within the next two months will result in further reductions in rail freight rates and a tariff on crude and refined products now being imported from the United States that will make these markets available to Turner Valley crude.

Western refineries believed within reach of Turner Valley operators would normally require between 16,000 and 18,000 barrels of crude daily, not sufficient to take the entire present production of the field but considerably above the 6500 barrels of crude now refined at Calgary and the comparatively small amounts shipped to Regina. Refinery capacity at Moose Jaw is 3000 barrels, at Regina 4500 barrels and at Winnipeg 2600 barrels. Adding smaller refineries scattered throughout the prairie provinces would bring total capacity up to 28,000 barrels daily, a figure comparable to Turner Valley's estimated potential within a few months.

Ontario, with six refineries supplied with imported crude and having a total daily capacity of 38,000 barrels, would be the next market sought by Valley operators who are confident that extensive development of Alberta fields will eventually supply sufficient crude to fill the needs of the Dominion.

Two Turner Valley tests in "hot" territory are expected to complete this week. Royalite Oil Company's Sterling Pacific 6, Legal Subdivision 5, Section 33, Township 18, 2-w5, was drilling at 6990 feet, 307 feet in the Madison lime, producing formation, with the crude horizon expected momentarily. West Flank Oil Company's 1, Legal Subdivision 1, Section 32, Township 18, 2-w5, was at 6940 feet, 245 feet in the Madison.

Reaction to Acid Good

Brown Oil Corporation, Ltd.'s recently completed No. 1, which extended the South Turner Valley producing area, gave remarkable performance following acid treatment. Producing at the rate of 350 barrels daily when acid was applied, its flush production was in excess of 3000 barrels and settled production is expected to be about 1500 barrels daily. A marked increase was also obtained at the company's No. 2, although not as great as at the No. 1. Both wells have heavy gas pressure.

Taber Test Hits Sand

On the Taber structure, in South Alberta, Plains Petroleum Corporation, Ltd.'s No. 3 reached the top of the producing horizon, and was to underream, run casing and cement before being drilled to production. The No. 2 yielded 127 barrels in 12 hours after running tubing and pumping off the line. Sufficient gas pressure was built up to raise the oil and a one eighth-inch bottom hole choke and sand packer were used. The sand packer was later withdrawn, tubing rerun and the well placed on the pump. It was producing at the rate of 12 barrels an hour until the engine broke down. While awaiting parts from the United States, it has been tied in and is flowing without sand packer. The well's performance, producing from a shallow depth, will result in considerable activity on the structure within the next few months.

Other Canadian Wildcats

The following reports were received from other West Canadian wildcat structures: on Birch Ridge, Elbow Oil Company, drilling at 5252 feet; on Calling Valley, Sentinel Oils, drilling at 5923 feet; Anglo-Indian Oils Corporation, derrick; on Cardston, Franco Oils,

SKELLY TO START WORK ON CONCESSION IN HAITI

Efforts to open an oil field on the island of Haiti, in the Dominican Republic, will be started immediately by Skelly Oil Company, according to an announcement made here last week. With approximately 1,000,000 acres of land under lease, the company is forming a skeleton crew to establish a seaport office and field camp in the province of Azua, location of the concession. Field manager for the development is M. W. Mathews, assistant field superintendent at Oklahoma City, who is picking the men to do the advance work.

Company officials believe the area is on a direct trend from eastern Venezuela. This contention is reported agreed upon by numerous geologists familiar with the area, who also state other islands of the West Indies may have producing possibilities. Eastern Cuba and Puerto Rico are also reported in line for surveys in the near future regarding possible productive areas.

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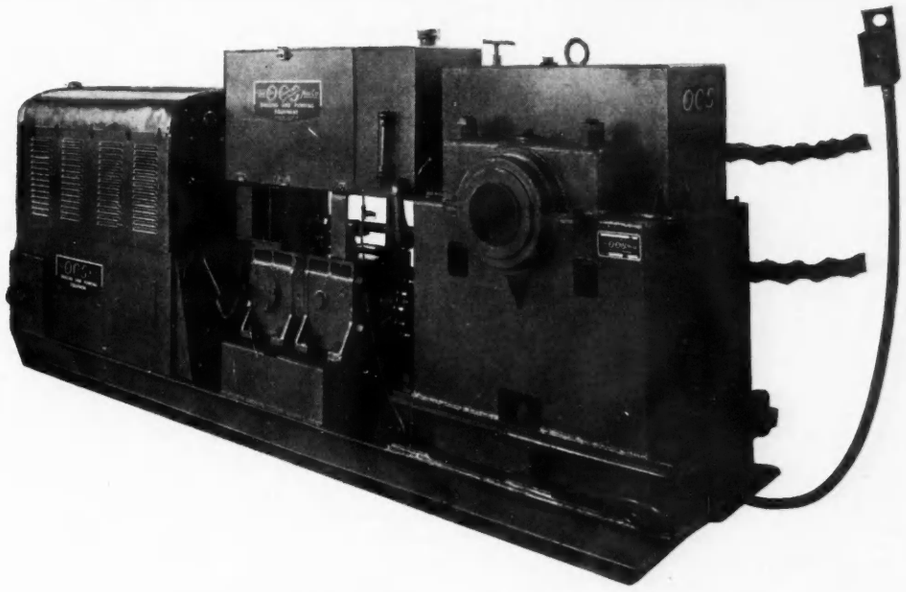


Automatic Retrieving

FOR FASTER, STRAIGHTER HOLES

For drilling straighter holes with greater speed, the O C S Automatic Weight Control is a definite advance in rotary drilling operations. This device is an independent unit consisting of a V-8 power unit driving a self locking worm gear through a variable speed, reversible hydraulic transmission.

Automatic operation is always under complete and instantaneous control of operator and can be switched to manual control. The Mechanism in the control box, either manually or automatically varies the speed or direction of the hydraulic transmission which in turn controls the pipe through the self locking worm gear and draw works.

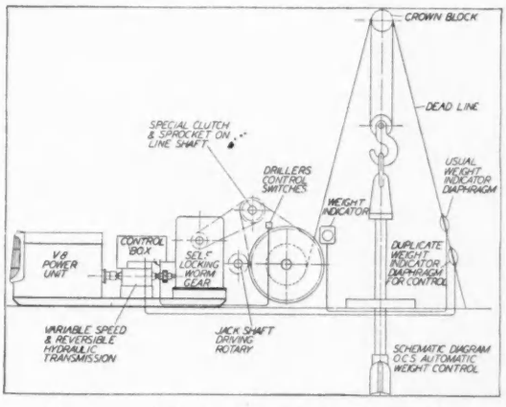
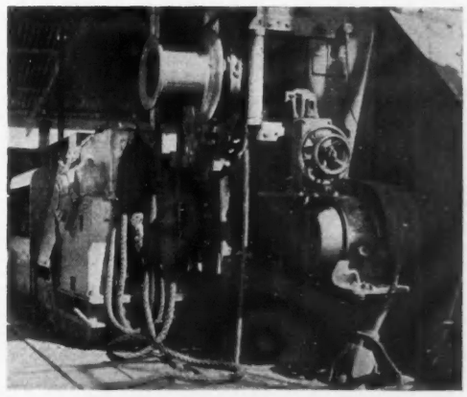


Diagram of Typical Installation of O C S Automatic Weight Control.



Illustrating the Location of the Automatic Weight Control in a Standard Rotary Drilling Rig.

THE ADVANTAGES

- More Speed
- Straighter Holes
- Continuous Feeding
- More Hole Per Bit
- Feeds Up As Well As Down
- Helps Prevent Freezing Pipe
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cleaning at 4580 feet; on Clearwater, Western Development Company, temporarily idle at 142 feet; on Del Bonita, Lyons-McIntyre, drilling at 450 feet; on Duncan, Spindletop Oils, drilling at 2415 feet; on High River-Aldersyde, Ranchmen's Oil Company, waiting at 7225 feet; on Highwood Sinclair, Green Valley Petroleums' Banner 1, drilling at 4302 feet; on Hunter Valley, Hunter Valley Oil Company, cemented preparatory to a test at 8274 feet; on Kootenay Dome, Roxana Petroleums, drilling at 3722 feet; on Lethbridge, Lethbridge Petroleum & Refineries No. 1, cemented at 2198 feet; on Moose Dome, Moose Oils' No. 2, testing at 1553 feet; on New Valley, New Valley Oil Company, waiting at 8462 feet; on Pincher Creek, Weymarn Petroleums' No. 2, waiting at 6432 feet; on Ribstone, Dina Oil & Refining Company's No. 4, drilling at 1033 feet; London-Ribstone Petroleums' No. 2, testing with no depth reported; on Steveville, Anaconda Oil Company, drilling at 1192 feet; on Wainwright, Altoba Oils, derrick; Battleview Oils, waiting at 1894 feet; on Watson, Mar Jon Oil Company's No. 3, changing from cable to rotary at 5530 feet.

Japan's Imports from U. S. Expected To Show Increase

A total of 83,441,000 barrels of crude oil and other petroleum products have been shipped to Japan from the United States during the past 4½ years, according to figures released by the West Coast office of the U. S. Bureau of Mines. Practically all of this movement was from California, only one cargo of gasoline having been shipped from the Gulf and a few barrels of lubricants from East Coast points.

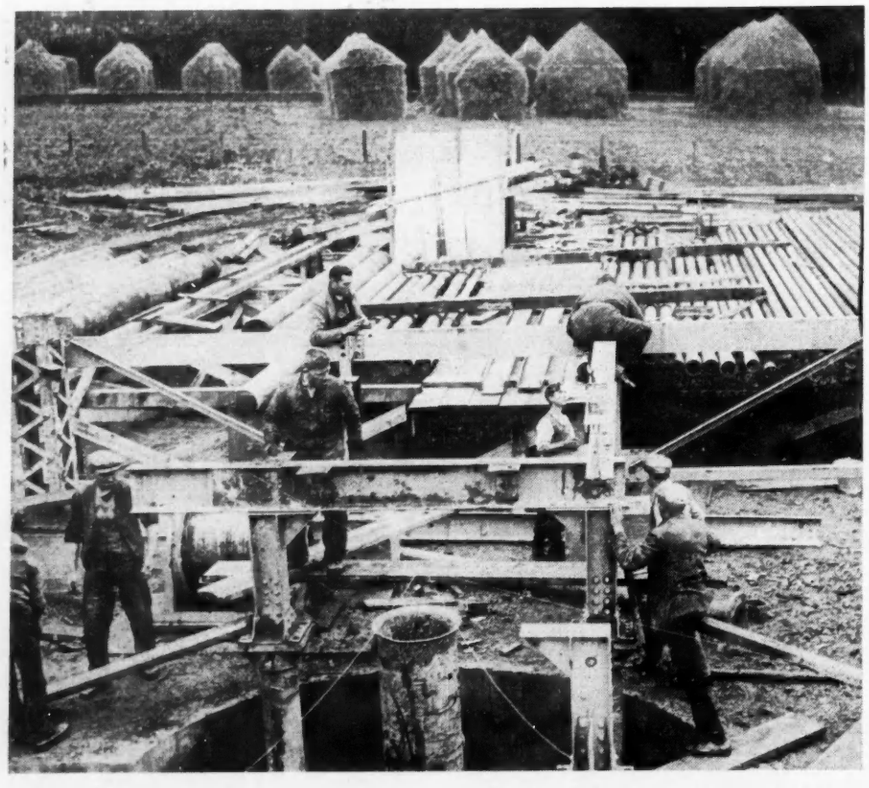
During the first half of 1937, total of 13,115,000 barrels of various products moved to Japan, indicating that petroleum exports to Japan this year will exceed any previous year. The total movement in 1933 was 12,175,000 barrels, and total in 1934 was 16,321,000 barrels. The year 1935 saw an increase to 20,804,000 barrels and in 1936, the total exports to Japan jumped to 21,026,000 barrels.

This export movement consisted mostly of crude oil and various types of fuel oils, although the movement of gasoline has averaged around 1,000,000 barrels a year.

Following are figures in barrels by years of exports to Japan:

	1933	1934	1935	1936	6 mos. 1937
Crude	5,533,000	6,693,000	10,500,000	10,394,000	7,008,000
Gasoline	1,031,000	1,079,000	699,000	1,082,000	594,000
Kerosene	265,000	375,000	31,000	.....	141,000
Lubes	165,000	257,000	282,000	295,000	*
Fuels, all types	5,181,000	7,917,000	9,292,000	9,255,000	5,372,000

*Not available.



Erecting derrick for Anglo-American Oil Company's wildcat near Dalkeith, Midlothian, on the edge of England's oil shale region. D'Arcy Exploration Company, a subsidiary of Anglo-Iranian Oil Company, is wildcatting for oil about two miles away from the above rig.

Austria looks forward to greatest production year

Production of crude oil in Austria during 1937 will almost double cumulative production there during the years 1932 through 1936, inclusive, estimates Gardner Richardson of Vienna in tentatively placing this year's recovery at 36,000 metric tons. During the first seven months of 1937 Austria produced 20,190 metric tons. In 1936, which was Austria's peak year up to that time, the total production of crude for the nation was 7477 metric tons.

Leading producers in Austria are Erdolproduktionsgesellschaft, m. b. H., (Brunnbauer & Company interests), and "Rag," (Roholgewinnungs).

All concessions of Mexican Eagle Oil Company in the Poza Rica, Troncones de Potrerillos, Poza de Cuero, and Fuera Legal de Coatzuitla fields, Vera Cruz state, involved in the unitary well drilling agreement with the Mexican federal government have been approved, and the company has withdrawn litigation pending in two Mexico City district courts concerned with disputes with the government over ownership and exploitation rights to oil and other national lands which were given in charge of the General Administration of National Petroleum, stated a telegram from Mexico City November 19.

Await location of first wildcat in Portugal

Considerable interest is being manifested in Lisbon as to where Anglo-Ecuadorean Oilfields, Ltd., will spot the first wildcat to be drilled on a concession it recently requested from the government of Portugal. A month ago it was considered that delay in granting the request of the applicant for the exploratory concession would be a mere matter of form, as the government is known to favor encouragement of foreign capital for development of petroleum resources in that nation.

Czechoslovak yield still continues to show decline

Czechoslovakian production in August totaled 1479 metric tons, representing a decline of 12.2 percent as compared with 1684 metric tons in July, and of 6.7 percent as against 1586 metric tons in August of the preceding year, according to the ministry of public works there.

Production of natural gas in August amounted to 121,800 cubic meters, 9.2 percent above the July output of 111,592 cubic meters, and 15.3 percent more than that of 105,599 cubic meters in

Concession is granted

A confirmatory concession to explore and exploit 1023 hectares of land in Macuspana municipality, Tabasco state, Mexico, has been granted Compania Petrolera Veracruzana, S. A., by the ministry of national economy.

NO DISTORTION
NO MISALIGNMENT
NO PACKING TROUBLE
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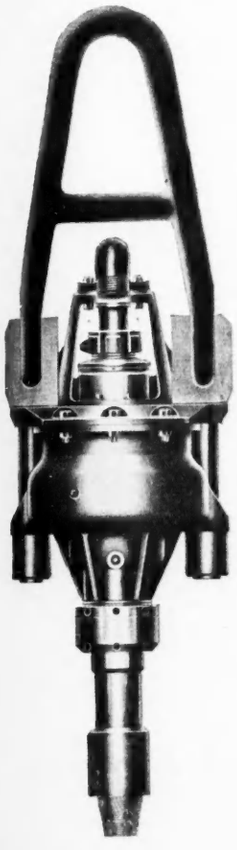
GRAY
DEEP WELL
SWIVEL



The load is carried from the foundation — an original, patented feature on Gray Swivel. They have strength far beyond that required for high speed drilling. Radial bearings are sufficiently strong to maintain alignment necessary to avoid packing trouble.

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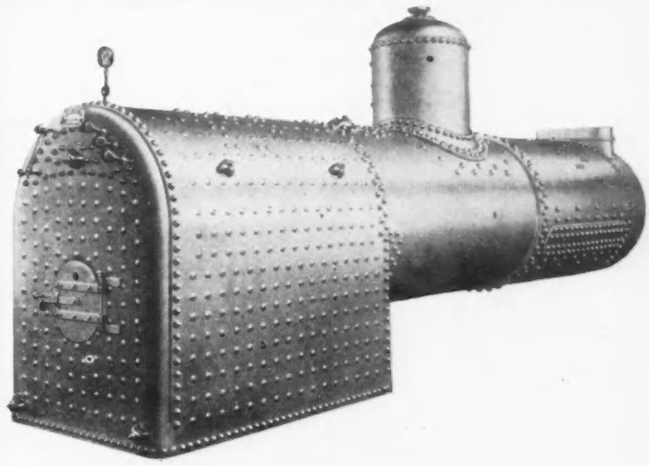

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These boilers are considered the easiest firing and best constructed boilers in the field. They are built for 85 to 125 horsepower, developed at 200 to 350 pounds steam pressure.

They are the open bottom type. The dome has semi-elliptical head and reinforcing plate inside barrel. Kewanee Boilers are ruggedly constructed of heavy steel plates, accurately rolled and flanged to shape.

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Sales Offices—Tulsa, Oklahoma; Dallas, Texas; Shreveport, La.

[*Continued from page 52*]

tion of the Navy Department. Of this amount, $770,950 was derived from rents and royalties from leases covering operations on the naval petroleum reserves, $3,100,000 from compromise settlements in litigation concerning the reserves and $117,508 from rentals of various properties.

A number of cases were pending before federal courts or other agencies at the close of the fiscal year, it was said.

Injunction halts drilling in new Long Beach area

Application for an injunction to prevent drilling in the new Long Beach, California, harbor area of the Wilmington field until clouded titles have been cleared, and directed against Long Beach city officials, including members of the harbor commission, has stopped active arrangements to start new wells. Hearing is set for November 23 and the injunction was asked by Jesse E. Webb, Long Beach builder and real estate man.

Prior to filing of injunction suit, permits to drill 15 wells had been granted out of the applications for 52. Companies with permits issued will not start work until the court acts.

Lion plans acquiring Atlas through stock purchase

Lion Oil Refining Company is negotiating with Atlas Pipe Line Corporation for purchase of the controlling common stock of the latter company, which has considerable East Texas production, owns an 8-inch trunk from Longview to Shreveport, and another of equal size from Shreveport to El Dorado, Arkansas. A subsidiary owns a 12,500 barrel refinery at Shreveport.

Potentialities of the Schuler field, Union County, recently found capable of production in lower Marine sand and in top of the Permian lime, is believed responsible for this move on the part of the Lion Oil Refining Company which is seeking an outlet to the Texas coast, through East Texas, should Schuler produce more crude than it could handle in its El Dorado refinery.

If the sale is consummated it probably will be closed December 1. Lion Oil Refining Company, it is understood, would continue operations of the Shreveport refinery, using East Texas crude. The Shreveport refinery is a polymerization unit.

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Wildcat southwest of Calvin indicates new field.

★ ★ ★

Test south of Konawa pool pumps 95 barrels of oil.

Tulsa.—A wildcat in Hughes County, Phillips Petroleum Company's Becker 1, NE NW SW 8-5n-10e, southwest of Calvin, had tanks full of oil after the last flow amounting to 146 barrels in 19 hours. Gas was gauged at 19,700,000 cubic feet. The latest core, taken from between 4460 and 4465 feet, had a 4-foot recovery consisting of sandy lime saturated with oil. Earlier in the week, a core from 4455 to 4460 feet consisted of fine sand with a show of oil. Top of the Cromwell sand was logged at 4398 feet.

In the Centrahoma area of Coal County, Carter Oil Company et al's Claytor 1 C WL NE SW 27-2n-9e, was reaming to core ahead. A drill stem test at 6418 feet, with wall packer at 6365 feet and cone packer at 6930 feet, opened for 30 minutes, showed 1 joint of mud and a good show of oil and gas with no water.

Stanolind Oil & Gas Company, Amerada Petroleum Corporation and Mid-Continent Petroleum Corporation's Salina 1, SE NE NW 4-5n-6e, south of Konawa pool in Seminole County, pumped 95 barrels of oil and 40 barrels of water from the Hunton lime in 22 hours.

West of Stroud in Lincoln County, Garlock et al's Young 1, C NL NW NW 23-15n-5e, may run pipe for a test of the dolomite. Top of the first Wilcox sand was found at 4472 feet, and total depth was 4483 feet in the dolomite.

Laffoon Outpost Shows

Northwest of the Laffoon pool in Lincoln County, Mid-Continent Petroleum Corporation's Vinson 1, SW SE SE 4-13n-6e, had 500 feet of fluid in the hole, 450 feet of which was oil. The rest of the fluid was drilling water. The test has top of the second Wilcox sand at 4207 feet and drilled to 4225 feet, the total depth.

A well which may extend the West Fitts pool of Pontotoc County ½ mile southeast is Patsy Oil Company's Meharg 1, C W½ SE SE 21-2n-6e, which had Cromwell sand at 3403 feet. It was coring below 3478 feet when last reported.

Oklahoma City Sector

Sinclair Prairie Oil Company's Smith 1, NW SW SE 12-17n-1w, in the Langston pool of Logan County, was drilling below 5100 feet in mud and water. The well had top of the Wilcox sand at 5042 to 5092 feet, and after bailing down 3500 feet had an estimated 1000 feet of oil in the hole.

Chances of extending Moore pool of Cleveland County to the east appeared improbable as an unusually thick Hunton lime section was found at Fain Drilling Company et al's Greenlee 1, SWc NW 22-10n-2w. Top of the lime was found at 6759 feet and the formation was drilled to 6990 feet. It had top of the Sylvan shale at that depth and continued drilling below 7027 feet. Average thickness of Hunton lime in producing wells in the Moore field ranges from 30 to 80 feet.

Ardmore Sector

In the Fox area of Carter County, Gulf Oil Corporation's Johnson 1, C SW NW 27-2s-3w, at 7909 feet was preparing to drill plugs within the next few days. It set 6⅝-inch casing at 7845 feet.

In the Marlow sector of Stephens County, Coline Oil Company's Johnson 1, SW SE SE 1-2n-8w, was swabbing below 4500 feet.

OKLAHOMA

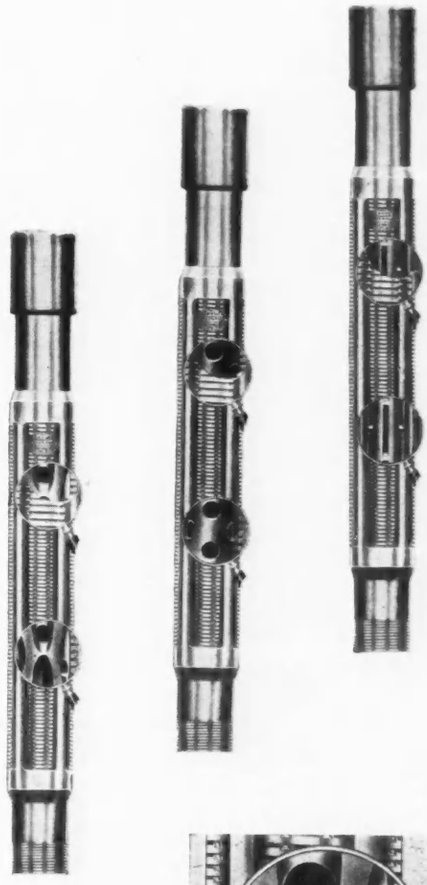
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARTER COUNTY—		
Carl Carter, A. N. Harley 1, csw¼ 19-2s-3w	¶2	1038
W. T. Wynn, Lowery 1, nw nw ne 29-3s-2w	1½	113
Lowery 2, ne ne nw ne 29-3s-2w	1½	109
Lowery 3, ne ne nw ne 29-3s-2w.	2	93
Lowery 4, ne ne nw ne 29-3s-2w..	1½	123
Kewanee Oil Co., H. Willis 18, sw se se ne 6-4s-3w (pb 1285)	10	1370
Magnolia, Richards 76, sw nw nw 6-4s-3w	27	1168
CREEK COUNTY—		
Cole et al, Nemeck 1, se sw ne 14-14n-10e	*	3228
E. J. Kroger, cw½ nw sw nw 22-17n-9e (otd 925)	5	1355
Link Oil Co., Jones 7, sw ne se ne 32-18n-7e (pb 2669)	12	3675
JEFFERSON COUNTY—		
Bridwell-Continental, W. D. Seay 4 "A", nw nw nw ne	75	1249
W. D. Seay 6 "A", ne ne ne nw 10-7s-5w	70	1262
LINCOLN COUNTY—		
Amerada Pet. Co., Lynde 1 nw sw ne 15-13n-6e	47	4325
Riley-Talbot et al, Weidler 1 nw sw nw 20-17n-2e	*	5030

*Failures; †Junked; ¶Million cu. ft. gas.

[*See page 60*]

You Get MORE out of a LAYNE SCREEN



By wrapping the wire directly on the pipe, the openings between the wires pass over more than just one pipe perforation. This conducts the oil to several perforations, allowing faster, freer flow into the pipe. Every inch of a Layne Wire Wrapped Screen does its share of the screening process.

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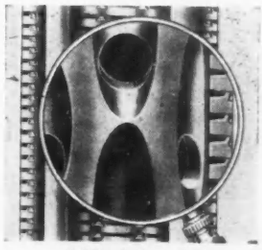
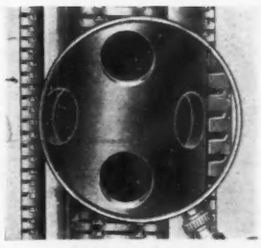
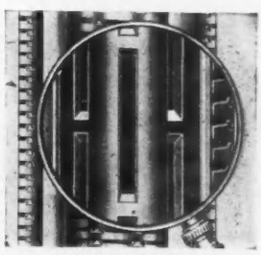


Milled Groove



Plain Drilled



Slotted Pipe

THE LAYNE SCREEN

Company, Well and Location	Init. Prod. Bbls.	Depth
MARSHALL COUNTY—		
Emerson, Heney 1 nw se ne 23-8s-5e	*	810
F. W. Merrick, Inc., Robinson 1 ne ne ne 33-7s-4e	*	2557
LOGAN COUNTY—		
Eason Oil Co., Smith 2 nw nw nw 13-17n-1w	1057	5119
Amerada et al, Foutz 3 ne ne ne 14-17n-1w	448	5140
MUSKOGEE COUNTY—		
Adkins, A. Eubank 1 ne se se 14-14n-16e	¶1	665
Arthur Oil, Bentz 1 cnw se 18-14n-18e	*	1700
Browning-Potter, A. Asbury 1 e½ ne nw 33-16n-15e	*	1792
NOBLE COUNTY—		
Continental, Conway 12 sw se sw 16-23n-2w	4161	4293
Lincoln Oil Co., O'Neil 3 se nw se 16-23n-2w	3745	4275
Tidewater Oil Co., Derr 1 se se nw 16-23n-2w	*	4545
OKLAHOMA COUNTY—		
Clark & Co., Lonsway 1 sw ne sw 15-12n-3w	260	6427
Transwestern. Our Lady's Church 1 nw se ne 30-13n-3w	53	6783
OKMULGEE COUNTY—		
J. E. Dow, 1B Adams sw sw se nw 12-14n-14e	12	1070
OSAGE COUNTY—		
Midco Oil Corp., 3 sw sw ne 18-22n-10e	*	2781
Champlin Ref. Co., 2 se nw se 22-25n-6e	*	2725
Ross Oil Co., 4 nw se ne ne 27-28n-10e	20	1337
PAWNEE COUNTY—		
Peter Adamson Jr., Thomas 9 se se sw 25-21n-8e	6	1137
Johnson O & R Co., School Land 1 ne se ne 13-20n-7e	*	3267
PONTOTOC COUNTY—		
Caloma Oil, Bentz 1 se ne sw 4-1n-6e	*	900
Gillette & Kroger, Duncan 1 nw se se 36-1n-6e	*	1325
Continental, Hale 1 e½ nw ne 2-1n-7e	395	4070
Magnolia, Young 2 ne ne nw 22-2n-7e	829	3936
Sinclair Prairie, Vivian 4 ne sw nw 22-2n-7e	59	3805
Crusaders, A. Smith 1 nw se ne 31-2n-7e	2055	4400
POTTAWATOMIE COUNTY—		
Magnolia, B. M. Green 2 ne sw nw 13-7n-4e	85	3455
Banta 3 ne ne se 14-7n-4e (otd 4354)	80	4354
Pure, Buster 2 nw nw ne 28-7n-4e (pb 3962)	9	4150
Phillips, Richards 3 sw nw se 35-7n-4e (pb 4166)	8	4338
SEMINOLE COUNTY—		
Delaney, Reed 2 ne sw sw 12-5n-7e	160	4288
Malernee et al, Flowers 5 se sw se 29-7n-6e	230	2945
I.T.I.O. Harjo 1 se se se 23-9n-6e (pb 3764)	22	4137
STEPHENS COUNTY—		
Fresno Oil Co., Simpson 2 s½ sw sw sw 34-1s-8w	*	1670
Geo. L. Pace, Allen 13 ne se se 3-2s-8w	46	2218
TULSA COUNTY—		
Moore & Gilbert, Camp 1 nw sw sw 10-19n-10e	15	895
Sommerset, A. Withers 2 sw sw sw 25-17n-12e	*	2346
WASHITA COUNTY—		
John Kolberg, Harris 1 nw nw nw 6-10n-16w	*	4200

*Failures; †Junked; ¶Million cu. ft. gas.

Kansas will charge extra for delayed well tests

Wichita.—The following, Rule 118, was issued by the Kansas Corporation Commission under date of November 5:

"Whenever a potential test is delayed or not completed as scheduled, thereby causing loss of time to supervising agents and additional cost, an assessment of $10.00 shall be made for each additional supervised test until the same is completed."

West Central Texas group to meet December 4

Annual meeting of the West Central Texas Oil & Gas Association will be held at Abilene, Texas, December 4, according to J. C. Hunter, president. Several oil industry leaders have been tentatively booked as speakers at the banquet to be held in the Hilton Hotel. The organization is one of the most active independent oil groups in the state, and has enjoyed a healthy growth within the past year as result of large scale operations in Jones and nearby counties.

Registration law of Texas engineers to be discussed

A regular meeting of the South Texas Section of the American Society of Mechanical Engineers to be held November 23, 1937, at Rice Institute, Houston, at 7:30 p.m., will be devoted primarily to a discussion of the Professional Engineers' Registration Law recently passed by the Texas Legislature.

Members of the local sections of the American Institute of Electrical Engineers, the American Society of Civil Engineers, the American Institute of Mining Engineers, and the Houston Engineers' Club have been invited to take part in the program.

The program committee has requested W. R. Woolrich, dean of the School of Engineering at the University of Texas, and a member of the Local Sections Committee of the American Society of Mechanical Engineers, to discuss development of engineers' registration laws in the United States.

Following Dean Woolrich, W. W. Trout, Chairman of the Texas' Engineers' Registration Board, will discuss the various phases of the Professional Engineers' Registration Law in Texas.

Tulsa geological society hears two speakers

Tulsa.—Tulsa Geological Society held its November 15 meeting in the Tulsa Club, to hear H. B. Delleney speak on the Photo Electric Process for the Determination of Water Flows in Oil Wells, and Dr. W. B. Steward talk on Temperature Measurements in Oil Wells of the Permian Basin. Despite the first snow of the season, the meeting was very well attended, both papers occasioning a high degree of interest and discussion. Processes of the two aids to correlation and adaption to special requirements were described; advantages and limitations were mentioned.

For illustrative purposes of the two talks, the authors explained slides and graphs of actual findings in Permian Basin and Mid-Continent wells. The manners of introducing each piece of equipment into a hole was outlined, and special factors entering into the interpretation of results were diagnosed. Preparation of fluid for the use of photo-electric work was described.

Bemis Pool production extended half-mile west.

★ ★ ★

New gas field opened north of Hugoton.

Wichita.—West extension of the Bemis pool and east extension of the Trapp South pool, coupled with opening of a new gas area north of the Hugoton gas pool, were outstanding developments in Kansas last week. Activity slowed due to the first near-zero weather of the winter.

Champlin Refining Company's C. M. Hadley 1, C SW 29-11s-17w, was the extension well for the Bemis pool, Ellis County, pushing producing limits ½ mile west. The hole filled 1500 feet with oil after plugs were drilled at 3535 feet in Siliceous lime. It was fishing for lost bailer when last reported.

The Trapp South pool of Barton County was extended ½ mile east by Cities Service Oil Company's F. H. Bitter 1, NWc SW 8-16s-13w, which drilled to 3383 feet in Siliceous lime and filled 950 feet with oil in 16 hours. Top of the lime was found at 3376 feet. A little water was showing with the oil.

In Grant County, Frank Parrish et al's Helmley 1, C SE 22-28s-37w, northwest of Ulysses, after drilling to 2720 feet in lime, was shot with 100 quarts and made 7,642,000 cubic feet of gas.

Southwest of the Hugoton area, an old well was treated with acid and doubled the original production. Republic Natural Gas Company's Sibon 1, C NE 2-34s-39w, made 28,500,000 cubic feet of gas. It originally was completed for 14,000,000 cubic feet of gas, more than 7 years ago.

Favorable showings were reported from The Texas Company's McCarroll

1, C WL NW 29-10s-17w, southeast of Plainville in Rooks County. A core from 3703 to 3713 feet in Siliceous lime had only 1 foot of recovery, but had a good saturation of oil. The well is drilling below 3765 feet. Top of the lime was found at 3699 feet.

Other reports from the state were more or less routine. Two miles south of the recent wildcat strike of Fred Rust et al's Drach 1, in Stafford County, Stanolind Oil & Gas Company's Teichman 1, SEc 13-22s-13w, 3 miles northwest of Hudson, got only 4 bailers of water per hour after perforating the Simpson sand between 3747 and 3756 feet. The hole will be plugged back to 3735 feet where more perforations will be made. Teichman 1 had top of the Siliceous lime at 3754 feet and drilled to 3760 feet. The Siliceous lime will be tested later.

Murfin & Parks et al's Opdycke 1, SWc 20-14s-13w, has been named the discovery producer for the Hall North pool of Russell County. It was completed for 354 barrels of oil from 3180 feet in the Gorham sand, and is 1 mile northeast of the Hall pool.

Olson Drilling Company et al's Fowler 1, C SW 26-27s-22w, southeast of Dodge City in Ford County, was drilling below 5453 feet in lime and chert, but had reported no further showings since one week ago, when a small show of oil in the Mississippi lime was found at 5060 feet. It had top of the lime at 5045 feet.

Latest wildcat strike for Sumner County was completed last week for a potential of 378 barrels of oil and 2½ barrels of water. It was Magnolia Petroleum Company's Baird 1, SW SE SE 2-30s-4w, producing from 4395 feet in the Wilcox sand.

Tubing will be rerun at a recent wildcat pool opener in Sedgwick County, it being I. W. Murfin et al's Martin 1, SEc NW 18-28s-1e, for a pumping test. The hole is bottomed at 3494 feet in Wilcox sand. The test made 110 barrels of oil in 8 hours on an earlier test, but the flow of oil was stopped when acid was run in to free cement lodged in the bottom of the hole.

National Refining Company was bailing Fee 1, SE NE SE 36-27s-2e, another recent pool opener for Sedgwick County, east of Wichita. Five-inch casing had been run preparatory to taking a potential test. The well made 101 barrels of oil in 5 hours during preliminary tests. It was bottomed at 3099 feet in Wilcox sand.

Another good producer has been completed in the Herrick pool of Sumner County at Sinclair Prairie Oil Company's Herrick 4, NE SW SE 15-35s-2e, flowing 240 barrels of oil daily from 3438 feet in chat just below the Bartlesville sand.

Third producer in the Zenith pool of Stafford County is Stanolind Oil & Gas Company's Paulson 1, NEc SW 23-24s-11w, west offset to the discovery producer. It made 882 barrels of oil natural from the Misener sand at 3809 feet. The pool is the first in Stafford County to find production from a sand zone.

In the Habiger district, Ellsworth County, Skelly Oil Company is moving in materials and digging cellar for Zink 3, NW SW SW 32-17s-10w, a direct offset to the company's Zink 1, discovery producer, which made 7604 barrels of oil daily.

KANSAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARTON COUNTY—		
Palmer et al, Polcyn 1 nw nw se 4-16s-12w	949	3325
Phillips, Bitter 3 nw nw ne 6-16s-13w (pb 3379)	896	3386
Shell, J. Ehrlich 1 ne ne nw 18-16s-13w	1387	3372
Stanolind, C.K. Allen 1 sw sw nw 25-16s-13w	*	3440
Morrison "A" 2 se se sw 27-16s-13w	1125	3414
Thorne "A" 2 sw se se 27-16s-13w	*	3431
Continental et al, L. W. Ainsworth 8 ne ne ne 23-16s-13w	*	3450
Stanolind, Riemann 8 ne ne nw 34-16s-13w	833	3422
Riemann 9 ne nw nw 34-16s-13w	1729	3406
Schantz"A" 5 ne se nw 2-20s-11w	2122	3289
Kowalsky 4 sw sw ne 11-20s-11w	1932	3285
Lario & Atlantic, Bryant 1 se se se 23-20s-11w	2284	3285
I. T. I. O., Sessler 4, sw sw sw 24-20s-11w	1889	3268
Bryant 6 ne ne nw 25-20s-11w	1708	3267
Texas, L. Hoffman 5 se nw nw 6-16s-13w	2441	3340
BUTLER COUNTY—		
Polhamus, Leon Bank 1 se se se 32-27s-7e	50	2788
CHASE COUNTY—		
Calif. Ill. & Kansas Oil Co., Evans 1 sw sw nw 11-22s-9e	*	2460
CHAUTAUQUA COUNTY—		
C. E. Roth, Gwinn 1 cw½ se ne 10-35s-12e	*	2038
COWLEY COUNTY—		
W. K. Royalty, Ferguson 3 ne ne nw 28-30s-8e	*	2196
ELLIS COUNTY—		
Lario, Romine 3 nw nw se 18-11s-16w	2173	3347
Republic Nat'l. Romine 5 se nw nw 18-11s-16w	2690	3303
Cities Service, Bemis 8 nw ne se 21-11s-17w	2428	3388
Magnolia, Johnsen 5 ne sw ne 22-11s-17w	2036	3441
Deep Rock, Baumer 26 ne se ne 27-11s-17w	3028	3408
Marbay, Bemis "E" 1, se sw nw 28-11s-17w	1351	3478
Wolf Creek, Bemis "A" 3 ne ne nw 4-12s-17w	1358	3568
Lario, Ball, 1 nw nw ne 8-12s-18w	*	3816
ELLSWORTH COUNTY—		
Phillips, Patzner 5 nw ne sw 30-17s-10w	380	3312
ELK COUNTY—		
Veeder Supply, Doublas 2 sw sw nw 28-28s-12e	15	1141
Denton & Morrow, Burke 9 nw sw sw 34-29s-10e	25	1392
Elk Pet. Co., Cory 14 sw sw se 9-30s-9e	25	2570
W. H. Jones, Walker 7 w½ nw se 5-31s-10e	16	2223
GRANT COUNTY—		
R. K. Wilson, Helmley 1-22 cse¼ 22-28s-37w	¶7.5	2720
GREENWOOD COUNTY—		
McGinnis et al, Hanley Est. 1 sw sw sw 25-25s-9e	10	2171
HARVEY COUNTY—		
Derby, Lehman 2 se sw nw 13-22s-2w	921	3300
McPHERSON COUNTY—		
Continental et al, J. M. Bochner 2 nw ne se 29-21s-1w	643	3331
NESS COUNTY—		
J. H. Carpenter et al, M. B. Shiner 1 nw nw ne 19-18s-25w (pb 4399)	1134	4438
RICE COUNTY—		
Bridgeport, Habiger 8 sw nw nw 5-18s-10w	3701	3015
Gulf, Stant 1 ne ne ne 6-18s-10w	5144	3024
Shell, Hathaway 4 sw sw ne 33-19s-10w	1735	3299
Watchorn Oil Co., Dubray Est. 1 ne sw se 18-20s-10w	*	3424
Sinclair Prairie, Ramsey 1 sw sw sw 7-21s-6w	288	3476
Atlantic, Patton "E' 1 ne nw sw 5-21s-7w	193	3352
Gordan & Raines, Snyder 2 sw sw se 9-21s-7w	885	3379
Continental, Engelland 1 ne ne ne 13-21s-7w	241	3461
Bell O & G Co. et al, Timbers 1 nw nw ne 8-21s-8w	*	3522
ROOKS COUNTY—		
Superior Oil Co., et al, Casey 1 se se se 35-10s-19w	*	3686
RUSSELL COUNTY—		
A. H. Witt, Baier 1 se sw se 34-13s-15w	*	3326
National Ref. Reinhart "D" 3 se ne ne 19-14s-14w	1698	3055
Stanolind, C. A. Mermis 22 nw se ne 5-14s-15w	786	3086
Transwestern, H. Polcyn 10 se nw se 10-14s-15w	105	3261
Hartman & Blair, Harbaugh 7 nw nw sw 25-14s-15w	1898	3184
Carter Oil, Detrich 7 se sw se 8-15s-13w	371	3304
Coralena, H. Sellens 7 nw ne nw 30-15s-13w	1544	3314
Texas, D. Brandenburg 4 nw sw nw 20-14s-14w	1764	3031
SCOTT COUNTY—		
Atlantic, Pyle 2 w½ nw se 14-20s-33w	1140	4687
STAFFORD COUNTY—		
Stanolind, Komarek 11 se ne ne 30-22s-11w	1064	3580
Komarek 13 nw ne se 30-22s-11w	1485	3558
Robt .S. Shank 1 se se se 17-24s-13w	*	4145
STEVENS COUNTY—		
Panhandle-Eastern, Parsons 1 cnw¼ 3-31s-37w	¶7	2796
Morgan 1, c nw¼ 35-33s-39w	¶11	2710
Benedum & Trees, Mitchell 1 cnw¼ 2-35s-38w	¶5.5	2840
TREGO COUNTY—		
McNeely et al, Hille 1 nw se se ne 22-15s-24w	*	4727
WALLACE COUNTY—		
Wilcox O & G, Parker 1 se se ne 9-11s-40w	*	5270
WOODSON COUNTY—		
McGinnis, Weide 6 ne nw se 31-23s-15e	15	1580
Sheedy, Klick 9 sw se sw 20-25s-14e	15	1436

*Failures; †Junked; ¶Million cu. ft. gas.

NEW MEXICO

Activity to slump. Vacuum outpost flows while drilling

Hobbs, New Mexico.—Field operations in Lea County continue to decline, with only five new tests authorized the past week. Completions have exceeded the weekly quota of locations for more than a month. Operators propose to restrict drilling in the older areas to necessary offsets until assurance is given that the crude demand will check the reduction in well allowables.

The large volume of completions listed for the past weekly period will be followed by a steady slump in new wells until development is resumed on an active basis.

Averaging 26 barrels hourly while drilling in with cable tools, The Texas Company's State 1-L, C SW NE 1-18s-34e, located 3¼ miles south of production in the Vacuum pool, was bottomed at 4463 feet. Progress has been retarded by insufficient tankage.

Crandall, Maxwell and Osmond's J. C. Maxwell 1, northern Lea County wildcat, encountered a half bailer of salt water per hour from lime at 5070 feet, and was drilling at 5193 feet without a gain in water. Humble Oil & Refining Company's Saunders 2, C NW NW 9-22s-34e, logged half a bailer of salt water hourly at 4039-50 feet, and was drilling at 4130 feet. James Mascho et al's Cloyd-Conoco 1, C SE SE 20-22s-33e, was drilling in anhydrite at 3523 feet, having passed up a prolific flow of sulphur water encountered at 3319 feet. The latter two are Delaware pros-

pects for the southwest portion of the county.

Continental Oil Company et al's Reed 1-B-24, C SE SW 24-20s-36e, near the junction of the Eunice and Monument fields, flowed 66½ barrels hourly natural from lime at 3810-3861 feet through ¾-inch choke. It is one of the largest wells in the area. The same group's Sanderson 4-A-14, C NE SE 14-20s-36e, broadened the Monument area to the southwest with a natural flow of 22 barrels hourly through ¾-inch choke from lime at 3770-3856 feet.

Operations have been resumed on Gulf Oil Corporation's L. A. Munyon 1, C NE NE 28-23s-37e, an intermediate test for the Skelly and Mattix fields. It was spudded in December, 1933, and halted at 539 feet.

Linking of the Penrose and Hardy sandy lime areas became assured when Amerada Petroleum Corporation's Hare 1, C SW SW 33-21s-37e, gauged 12 barrels hourly through one-inch choke after using 2000 gallons of acid at 3760 feet.

Plugging orders have been issued for Continental Oil Company et al's Etz 1-A-24, C NW NE 24-16s-30e, northern Eddy County wildcat. It was drilled to sulphur water at 3745 feet, with an elevation of 3860 feet, and yielded only a small amount of oil with water after plugging back to 3725 feet for a nitro shot.

R. A. Shugart et al's Coulthard 1, C NW SW 35-18s-31e, wildcat near the east edge of Eddy County, was drilling at 3510 feet, carrying 1700 feet of 37 gravity oil in hole from sand at 3440-47 feet.

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
EDDY COUNTY—		
Cities Service Oil Co., State 1-J, c s½ sw se 16-17s-30e	167	3287
Continental Oil Co. et al, Etz 1-A-24, c nw ne 24-16s-30e	*	3745
Grayburg Oil Co., Burch 8, se ne nw 19-17s-30e	20	3225
Premier Oil Co., Parke 1-E, nw sw ne 22-17s-30e	75	3423
LEA COUNTY (Eunice)—		
Cities Service Oil Co., Closson 7, c w½ se ne 6-22s-36e	6000	3830
Continental Oil Co. et al, Sanderson 1-B-24, c se sw 24-20s-36e	2500	3861
Humble, Fopeano 2, c se ne 35-20s-36e	500	3860
Jim Murray, Sr., et al, State-Wallace 4, nw sw nw 3-21s-36e	52	3840
Skelly Oil Co., State 1-H, c e½ sw nw 25-20s-36e	750	3852
Sun Oil Co., J. A. Akens 6, 3-21s 36e	50	3834
LEA COUNTY (Langlie)—		
Amerada Pet. Corp., Stuart 1, c w½ nw 25-20s-36e	750	3852
Anderson-Prichard Oil Corp., Gregory 1, c ne nw 33-25s-37e	60	3237
Langlie 1-D, c ne ne 8-25s-37e	336	3455
LEA COUNTY (Mattix)—		
Humble, J. Williams 3, c sw nw 34-24s-37e	750	3532
Stanolind, State 1, c se se 16-24s-37e	5	3540
LEA COUNTY (Monument)—		
Continental Oil Co. et al, Elliott 4-A-14, c ne se 14-20s-36e	960	3856
Stanolind, O. J. Gilluly 12-A, c nw nw 24-20s-36e	1000	3866
LEA COUNTY (Penrose)—		
Amerada Pet. Corp., J. G. Hare 1, c sw sw 33-21s-37e	500	3760
Landreth Prod. Corp., L. E. Grizzell 1, c sw ne 8-22s-37e	500	3739
Continental Oil Co. et al, Elliott 1-B-6, c nw se 6-22s-37e	100	3783
Skelly Oil Co., E. A. Sticher 2, c nw sw 4-22s-37e	400	3721

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH AND WEST TEXAS

Pecos and Crane County Ordovician lease prices up.

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K-M-A outpost makes good flow from Strawn sand.

San Angelo.—Steep prices for lease and royalty protection in northern Pecos County and across the Pecos river in southwestern Crane County were paid last week on the strength of Ordovician production prospects.

The play followed confirmation of an abnormally high Simpson lime top logged by Magnolia Petroleum Company and Superior Oil Corporation's J. H. McKee 1-A, Section 24, Block 9 H&GN Ry Survey, Pecos County, which was halted at 4914 feet while owners added to their large block of leases in the two counties.

Top of the Simpson has ben tentatively called at 4775 feet, with an elevation of 2385 feet, or about 1870 feet higher structurally than the nearest Ordovician production in the Sand Hills field, situated 11½ miles north by west. Both areas are on the same anticline.

Operations were resumed late last week on McKee 1-A, and the diameter of the hole was reduced to provide a seat for 9-inch casing, which will be landed if oil saturation is encountered. This test is the third attempt to fulfill a 6000-foot depth contract. The original project was launched by the Tex-Mex Petroleum Corporation in July, 1936. Magnolia Petroleum Company purchased half interest in the 160-acre drilling site and full interest in 6250 acres of the lease block last April. The latter took over operations, and abandoned the first hole because of tools lost at 2720 feet. Rotary rig was moved in, and quicksand resulted in a second junked hole at 1210 feet. Superior Oil Corporation, Tulsa, acquired Tex-Mex Petroleum Corporation's interest last August along with other properties in Pecos and Ward counties.

Northern Pecos County Popular

Northern Pecos County has been rated as a good Ordovician bet by majors for several years, and a general trend to the southeast of Sand Hills field has been the most popular. Ordovician production found in the latter area, and the Big Lake field yields high gravity crude with a valuable lube content.

Gulf Oil Corporation's Waddell et al 6, C NE SW PSL Section 4, Block 27, half mile west of the largest deep producer in the Sand Hills field, logged top of Simpson at 5820 feet, or 3271 feet sub sea, and is about 10 feet lower structurally on this marker. It was coring gray lime and shale at 5939 feet, and will proceed to the first oil saturated zone before running pipe.

Wildcat operations to the west and southwest of Fort Stockton, Pecos County, attracted added attention when D. W. Francis et al's Westerman-Hadden 1, near the most easterly edge of the Rubian Phares Survey No. 1, encountered about 8,000,000 feet of sweet gas in broken lime at 2820-50 feet, with an elevation of 3155 feet. Drilling was resumed after recovering tools lost at the latter depth. The well tested 1250 pounds closed-in pressure. It is about 3 miles west of the town.

Oil In Hole

Humble Oil & Refining Company's Belding-Lunger 1, about 8 miles southwest of Fort Stockton, is carrying 16.6 gravity oil in hole from lime at 2450-51 feet while fishing tools at 2586 feet. The increase in water was noted at 2557-60 feet. The company has spudded an east offset, and a third test about half mile to the north in order to forestall lease expirations.

Goldsmith Broadened

The northwest portion of the Goldsmith field, Ector County, was broadened one mile to the west when Amos Beatty, Bowles and Borsodi's Texas Pacific Land Trust 1, NE NE SE, T&P Ry Section 21, Block 45, T-1-N, flowed 10 barrels hourly after a 360-quart nitro shot at 4190-4280 feet. Gas volume was rated at 5,000,000 feet daily. It will be acidized. Top of Yates was logged at 2705 feet, with an elevation of 3235 feet. These independents purchased the S½ NW Section 21 for $75 per acre cash and $250 per acre from one-sixth of the production. Both tracts carry one-sixth royalty.

Strawn outpost test flows 2086 barrels in 12 hours

Wichita Falls, Texas.—The Strawn 38-foot oil horizon in the old K-M-A field, southern Wichita County, commanded more respect as a source of high gravity production when a west outpost well flowed 2086 barrels of oil natural in 12 hours. Jack Kadane et al's C. A. Mangold 1, located 1¾ miles west of Kemp City and half mile northwest of nearest production, made the record flow for the field while running tubing to complete after drilling oil sand at 3715-3752 feet. On a separate gauge the well flowed 22 barrels hourly of 43.5 gravity oil through 1/32-inch choke. Top of lime was logged at 3635 feet, and first saturation was found at 3670 feet. Performance of this well places a higher rating on the potential oil yield of the area, which has lately developed a drilling boom after an elapse of six years since the discovery of the deep zone.

LeBus Brothers et al's G. W. Lewis 1, Block 20, nearest producer to the above prolific well, is rated at 400 to 500

barrels natural from sand and sandy-lime at 3724-3785 feet. It is reported that A. R. Dillard et al have contracted to develop this property on a turnkey contract of $21,500 per well, payable from five-eighths of the gross production, and after the drilling costs are amortized the former will have one-third working interest. E. C. Norwood et al's W. P. Ferguson 1, Lot 4, F. Peterswick Survey, A-343, Archer County outpost 6800 feet south by west of the above well, was drilling at 2000 feet. It is a short distance northeast of a 3912-foot junked hole and a 3979-foot Strawn failure drilled in 1934 by C. A. Everts et al. The 3979-foot test logged about 80 feet of oil saturation, but failed to respond to acid treatment.

East Flank Extended

East flank of the K-M-A deep field proved additional acreage when Grace & Woods' W. L. Hodges 1, H. B. Balch Survey, A-26, about 1½ miles east of the main field, flowed by heads after 300-quart nitro shot in broken pay at 3834-3909 feet. It is estimated at 300 barrels daily. Top of lime was logged at 3707 feet.

Melat & Graham (was E. J. Stump's) Waggoner Brothers 1, W. R. Eaves Survey, about 2¾ miles north of Kadane's west extension, failed to make a flowing producer after acid treatment and nitro shots at 3818-3949 feet, and was drilling at 4008 feet. Top of lime was logged at 3710 feet, or 2695 feet sub sea.

Allowable production of the deep wells was cut 10 barrels to 58 barrels daily effective November 16. Marginal well quota of wells in this depth classification is 40 barrels daily, which will be the minimum allowable operators can count upon in financing their drilling programs. New locations continue to make their appearance on a 10-acre spacing plan, although the majority of the operators are on record as preferring a minimum of one well to 20 acres.

Three local independent groups are carrying on the most aggressive drilling programs. Deep Oil Development Company, discoverer of the deep zone, and associates have six tests in process of completion, and three drilling, while Petroleum Producers Company has five tests at the final casing point, and two drilling. L. T. Burns is running four rigs, and two additional tests have landed the oil string.

NORTH TEXAS Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
J. M. Berkley et al, F. W. Pollei 1, lot 7	29	1162
Bridwell Oil Co., L. F. Wilson 5-F.	8	1398
L. F. Wilson 6-F	10	1400
L. T. Burns et al, Albers 15-A, blk 118	10	1253
C. H. Herbig et al, H. O. Prideaux 2, lot 1	*	656
White & Duncan, Sarah Webb 7-A, lot 9	*	745
CLAY COUNTY—		
Jack Storey et al, O. A. Davis 1, lot 13	*	1202
HASKELL COUNTY—		
E. W. Marland-Pete Drake, G. C. Corothers 1	*	3967
JACK COUNTY—		
Cockburn Oil Co., J. C. Enlow 2	287	3199
Edwards, Knowles & Crespi, S. M. Jones 4	302	3153
Hamilton Pet. Co., J. S. Rhodes 4	352	2369
Hanlon-Buchanon, Inc., E. B. Calvin 3	200	3059
Thos. D. Humphrey et al, G. T. Smith 6	127	2976
W. M. Johnson et al, Fee 3	*	692
R. H. Manning et al, Bryson 1	215	3052
Mullendore, Berry & Berry, R. R. Clayton 7-B	214	3097
Ohio Fuel Supply Co., D. J. Miller 2	*	3138
Perrin & Gillespie, Clayton Bros. 1	440	3092
WICHITA COUNTY—		
Browning et al, W. H. Chilson 1, blk 3	*	803
L. T. Burns et al, First Nat'l. Bank 16, blk 29	502	3844
First Nat'l. Bank 17, blk 27	771	3855
Fresno Oil Co., L. F. Ramming 30, sec 1	10	1721
E. Jeffers et al, W. B. Honaker 1, sec 3	†	615
F. P. Pace et al, Foster-Allen 12, sec 1	*	484
Panhandle Ref. Co., L. F. Ramming 17	*	1815
Perkins-Cullum Oil Co., S. B. Burnett 9-A, sec 2	10	1555
Geo. Proctor et al, Foster-Allen 19-A, sec 1	327	1940
Ryan Consol'd. Pet. Corp., G. E. Nance 124	*	570
S. H. Walton et al, Will Burnett 9	10	485
WILBARGER COUNTY—		
Tom B. Medders et al, Waggoner Est. 1, sec 45	1200	3025
YOUNG COUNTY—		
Paul Atchley et al, Benson 2-A, sec 1392	40	912
Pitzer & West, G. W. McCommas-Gulf 2, sec 444	750	3928
Pitzer-West & Tide Water Associated, LaPrade 3, sec 606	14	3936
Stuckey O&G Co. et al, Belknap 1, sec 21	*	775

*Failures; †Junked; ¶Million cu. ft. gas.

High gravity field found near Avis in Jack County

Wichita Falls.—A wildcat strike in central Jack County by Hanlon & Buchanon, Incorporated, points to the establishment of a new high gravity oil pool on the east edge of the town of Avis. E. R. & W. Worthington 1-A, north offset to a 3560-foot failure, and in the S. A. & M. G. Ry. Survey A-589, drilled oil sand at 2365-2369 feet, and filled 300 feet with oil in 17 hours. It later bailed 9 barrels oil in one hour. The previously drilled test showed oil in the 2300-foot horizon, which was passed up to try for production in the Strawn.

The above Tulsa concern is a producer in the Bryson field, and has been particularly active in Jack County wildcatting for more than a year.

Flowing production from a semi-wildcat in the north Young County shallow belt attracted attention the past week, although dry holes in the general area forecast a small producing area. C. E. Beavers et al's Cooper-Siebold (Minnich) 1, near NEc SE¼ Section 81, TE&L Co. Survey, flowed 4 barrels oil hourly through ¼-inch tubing choke from sand at 1185-87 feet. It is a short distance southwest of a small well drilled by Frank Woods et al.

TEXAS PANHANDLE Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
Cities Service, Magnolia 6-E	757	3095
COLLINGSWORTH COUNTY—		
M. & E. Oil Co., J. H. Grogan 1	*	2477
GRAY COUNTY—		
Cities Service, Walberg 5	180	3052
Drilling & Exploration Co. M. Leopold 6	370	3302
Gray County Prod. Corp., A. Chapman 3	1181	2740
Kewanee Oil Co., B. E. McKinney 6	607	3290
King Oil Co., C. Baer 3-A	568	3280
C. N. Ochiltree et al, C. N. Baggerman 1	204	3296
Southern Pet. Explo. Co., Vaughan 99	761	3230
Stanolind, W. G. Kinzer 6	311	3306
W. H. Taylor Oil Co., Taylor 1-B	110	2995

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANDREWS COUNTY (Fuhrman)—		
Fuhrman Pet. Corp., W. T. Ford 5	1559	4446
Landreth Prod. Corp., L. Jones 2	717	4472
Sun, J. W. Gowens 1	90	4482
CRANE COUNTY (Gulf-McElroy)—		
Gulf, J. T. McElroy 162	628	2939
CRANE COUNTY (McCamey)—		
Enniscrane Prod. Corp., Hughes 3-C	944	2087
COCHRAN COUNTY—		
Pete Wiggins & Ed. Hyde, Slaughter-Dean 1-A	*	5085
ECTOR COUNTY (Foster)—		
Atlantic, J. L. Johnson 2	333	4250
ECTOR COUNTY (Goldsmith)—		
Cities Service, H. E. Cummins 6-B	618	4267
Continental, T. P. Land Trust 5-B-35	698	4280
W. H. Dunning Est., C. Scharbauer 6	1189	4223
Gulf, C. A. Goldsmith 49	2040	4235
Rogers & Rogers, T. P. Land Trust 3-A	222	4305
ECTOR COUNTY (North Cowden)—		
Ohio, L. E. Wight 1	416	4236
Stanolind, J. M. Cowden 61	836	4295
FISHER COUNTY (Royston)—		
Texas Co., G. A. Daniels 3	33	3115
GAINES COUNTY (Wasson)—		
Amerada, F. Matthews 1	175	5018
HOWARD COUNTY—		
Continental-Group 1, W. R. Settles 1-B	1291	2450
Ennisbrook Oil Corp., Texas Land & Mtg. Co. 16	908	2815
Illinois Oil Co., R. Lane 6	779	2835
Shasta Oil Co., G. M. Dodge 12	1425	2761
Sinclair Prairie, G. M. Dodge 51	353	2825
JONES COUNTY—		
Butler & Horne, R. B. Cox 1	*	2790
Condor Pet. Co., H. Sayles 14	472	1972
Fain-McGaha Oil Corp.-Sinclair Prairie, Olson 1	799	3218
T. C. Hadley et al, Mrs. Blackwell 1, blk 70	*	1420
Lewis Prod. Co., H. Sayles 8	792	2000
Maro Oil Corp., F. M. Webb 1	*	1750
Ungren-Frazier & Ambassador Oil Corp., S. A. Kelly 2	*	2105
West, Honea & Ungren-Frazier, D. Southard 1	*	3495
LOVING COUNTY (Wildcat)—		
Barnett Pet. Corp., W. D. Johnson 1-B	*	3174
PECOS COUNTY (Pecos Valley)—		
O. J. Perrin & Whitaker, H. J. Eaton 3	302	1698
PECOS COUNTY (Torborg)—		
Cardinal Oil Co., M. A. Smith 18-A	11	396
Childress Oil & Roy. Co., M. A. Smith-Sinco 24	6	400
PECOS COUNTY (Yates)—		
Ohio, I. G. Yates 18-D	3840	1375
UPTON COUNTY (McCamey)—		
Choate & Hogan, M. L. Baker-Conoco 5	200	2385
J. K. Hughes Oil Co., M. C. Powell 2	*	2807
Richardson Oils, Inc., G. M. Harlan 3	283	2138
Sergent-Rutter & Wilbanks, D. Elder 4	840	2250
Sun, M. L. Baker 5	388	2300
T. P. Coal & Oil Co., M. Shirk 9-D	390	2400
WARD COUNTY—		
Atlantic-Standard, University 7-B	759	2770
Gulf, E. W. Estes 60	133	2670
E. W. Estes 61	1236	2670
J. G. Kugle & Dorr, J. E. Probst 1	*	2520
Sun-Atlantic, Johnson 4	960	2575
Texas Co., University 1-C	722	2678
WINKLER COUNTY (Henderson)—		
Humble, J. B. Walton 17-C	3000	3065
Skelly, L. Daugherty 3-B	5000	3065
WINKLER COUNTY (Kermit)—		
Gulf, O. Clapp 20	630	3115
O. Clapp 21	557	3110
Humble, N. R. Colby 21	426	3080
Magnolia, J. B. Walton 106	531	3245
J. B. Walton 110	930	2955
J. B. Walton 111	893	2965
WINKLER COUNTY (Keystone)—		
Wm. Little et al, J. B. Walton-Pure 3	149	3402
YOAKUM COUNTY (Wildcat)—		
J. L. Greene et al, L. B. Nevels-Standard 1	*	5501

*Failures; †Junked; ¶Million cu. ft. gas.

May exempt 800 wells from Sunday shut-down order.

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Small Woodbine oil producer in Henderson County.

Kilgore.—Exemption of about 800 flowing wells from the Sunday shut-down order given the East Texas field by the Texas Railroad Commission has been proposed by the proration authorities in order to supply fuel for families residing within the field. Details for the application of the production holiday to begin the first Sunday in December and continue for four Sundays, or longer, occupied the attention of V. E. Cottingham, the commission's director of production, and Alex Crowell, gas engineer, late last week. Conferences were held with production and gasoline plant superintendents.

Decision to make exceptions to the blanket shut-down order was made after oil field residents entered protests that cooked meals and heat for homes would not be available during the proposed 24-hour cessation of production.

Cottingham estimates that about 800 wells scattered at intervals throughout the field will yield sufficient gas in making their oil production quota to meet the requirements of the domestic consumers. These wells are to be off production the following day in order to balance the weekly output with other producers. Wells to be designated as gas sources on the holiday will be isolated from key wells scheduled to be given bottom-hole pressure readings.

Trucks Available For Surveys

Fifteen bomb trucks and experienced pressure crews will be available to the commission in carrying out its announced plan to conduct pressure surveys while the field is virtually shut in.

Ten bombs owned by majors will be used, while five are owned by the commission.

Key wells heretofore used by the commission in conducting its monthly bottom-hole pressure survey will be closed in 7 a. m. Saturday preceding the production holiday, and remain off production the following day also. These key wells will be permitted to make up production for one day later in the week. Closing in of the key wells prior to pressure readings will result in higher pressures being recorded.

Shut-Down Opposed

Elimination of production for one day each week on every well in the field is opposed by a great number of the 1100 operating units. Owners of wells that produce a high percentage of salt water and nearly all property owners along the west and northwest flanks of the structure fear the consequences. Threats of court action to prevent the shut-down have been rumored. Water production currently estimated by the commission at 75,270 barrels daily from 3045 wells has spread rapidly in recent months. These water wells average 24.72 barrels of water daily in making their allowable quota of 20 barrels oil, and must be operated without interruption, else the volume of water gains and the oil yield declines.

The proposed production holiday will force a complete shut-down for the 20 natural gasoline plants in the field. These plants have a combined rated capacity of 185,000,000 cubic feet of gas daily, and the majority are operating with a full load.

Crude pipe line systems will not be greatly affected, as the idle day can be utilized in cleaning up lease stock tanks. Trunk lines that utilized centrifugal pumps in moving oil from the field will switch to smaller propellers on the off-day when the load is not adequate.

Prolonged Woodbine search in Henderson County rewarded

Tyler, Texas.—Prolonged search for oil production from the Woodbine horizon in northwestern Henderson County along the northeast extension of the Mexia fault plane yielded a small flowing well November 15. Discovery was made by Sherman Hunt, DeArman and McMillan's A. R. Dillard 1 through plug back operations after exploring the lower Trinity horizons with negative results. Dillard 1 flowed 105 barrels 44.8 gravity pipe line oil in 12 hours through 20/64-inch choke on tubing after gun-perforating 9⅝-inch casing with 20 shots opposite Woodbine at 3095-3105 feet. During the 24-hour period ending noon November 18 the well flowed 128 barrels of pipe line oil through 3/16-inch tubing choke, with 100 pounds working pressure on tubing.

Dillard 1 is located in the southeast corner of the south 160 acres of the north 270 acres of a 640-acre tract, on the east line of the H. Jeffrey Survey, about three miles northwest of Tool. Owners sold lease protection in financing a test of the lower Trinity horizons, which proved dry after drilling to Travis Peak at 6429-6518 feet, with an elevation of 361 feet. Woodbine series, topped at 3093 feet, was passed up in fulfilling the deep test obligation, but electrical formation surveying instrument used before cementing 9⅝-inch protection string of pipe at 3622 feet recorded about 12 feet of porosity in the upper Woodbine.

Prospecting along the northwestern Henderson County section of the fault plane has been carried on at intervals since 1924, and 12 Woodbine failures were drilled between the Trinity River and the north line of the county. Fred Haynes, Plano, Texas, pioneered the development, junked two holes at shallow depths a short distance northwest of the discovery, and drilled a 3059-foot failure several locations south of the producer. H. A. Baker et al drilled three Woodbine tests to the north of these operations. R. R. Penn, now deceased, W. C. Windsor et al's G. E. Murphy 1, Jas. Gardner Survey, situated along the same fault and to the north, logged top of Woodbine at 3150 feet and first sand at 3165 feet, and was abandoned at 3262 feet in April, 1925. The hole was not plugged. In July, 1933, the column of fluid stood at 900 feet from the surface with a small amount of free oil. Presence of this oil induced Baker et al to make their wildcat campaign in the area.

East Texas drilling is easing off

Kilgore, Texas.—Drilling activity in the East Texas field tapered off the past week. Field reports list 85 rigs in operation as compared to 98 the previous week. The slump was also reflected by completions, which declined from 61 to 52.

Operators have maintained an average of 90 rigs in service since the fore part of July. Based upon drilling permits approved and pending applications, this volume of development was slated to continue through the current year. Applications to drill 54 tests that are exceptions to the spacing rules were submitted at regular hearings conducted by the railroad commission the past week, and 25 of these were filed by majors.

Decline in field work noted the past week was largely confined to properties held by independents, who have been setting the pace for months in the drilling of inside locations.

EAST TEXAS Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Brogan O&G Co. T. O. Wright 6 (6-ac)	1000	3717
Cook Drl. Co., E. B. Alford 1-G (18/100-ac)	250	3552
Haynes Oil Corp., C. Lee 21 (73.6-ac)	6500	3635
Humble, John Bell 12 (65.55-ac)	7000	3793
A. L. Walker 20 (125-ac)	7500	3701
J. H. Wooley 36 (201.52-ac)	7200	3652
C. H. Lyons et al, Deason Bros. 2 (3-ac)	4200	3723
T. B. McDonald et al, C. B. Hannah 3-A (11-ac)	3600	3623
McMurrey Pet. Corp., S. Stone 3 (10-ac)	7000	3667
Manahan Oil Co., W. F. Neal-Shell 18 (109-ac)	2000	3773
Octo Oil Co., Frederick 2-B (3-ac)	336	3610
Sinclair Prairie, Mayfield Co. 24-B (142.06-ac)	7000	3616
Sun, S. A. Selman 12 (67-ac)	3600	3737
KILGORE AREA—		
Arkansas F.O. Co., Hughey-Ross 37 (220-ac)	4500	3538
Dyck Oil Co., G. Blackman 13 (50-ac)	1200	3660
Gen'l Crude Oil Co., L. Howard 7 (38-ac)	9000	3653
Gulf, S. G. Andrews 9 (63.23-ac)	8800	3584
Hamill & Smith, M. Gulp 4 (63/100-ac)	7200	3575

Company, Well and Location	Init. Prod. Bbls.	Depth
Humble, R. H. & W. Laird 12 (61.6-ac)	5800	3601
J. F. Merrick et al, I&GN Ry. 1, Tr. 1 (1.6-ac)	4000	3817
Natural Pet. Co., J. H. Henderson 7 (50-ac)	120	3603
Navarro Oil Co., R. N. Brightwell 28 (110-ac)	7500	3613
Overton Ref. Co., I&GN Ry. 16 (19.58-ac)	480	3561
J. F. Parks et al, W. Smith 3 (3.28-ac)	9500	3552
R. F. Renwick et al (was Killam-Solley), Bailey-Jordan 2 (6.66-ac)	84	3702
Sun, Hilburn-Loyd 32 (133.7-ac)	5400	3678
Sun-Seaboard Oil Corp., M. T. Cole 56 (266.17-ac)	9200	3566
Texas Co., H. T. Elder 34 (139½-ac)	10000	3645
L. J. Wardlaw, Rec., Trapshooter Reilly O. & Roy. Co., E. Mitchell 8, Tr. 2 (15-ac)	8000	3608
LONGVIEW AREA—		
Atlantic, G. A. Porter 22 (109.23-ac)	8900	3712
J. M. Tuttle 11 (58.17-ac)	9300	3645
Black-Knight Oil Co., J. G. McGrede 4 (18-ac)	6500	3652
Clark-Cowden Drl. Corp., J. M. Christian 11 (42¾-ac)	†	3578
Danciger, J. N. Taylor 4 (20.32-ac)	4800	3708
East-Tex Drl. Co., O. J. Phillips 1 (35½-ac)	*	3125
F-H-E Oil Co. et al, M. Christian 9 (16.14-ac)	10000	3680
R. Christian 15 (61-ac)	8500	3658
C. G. Glasscock et al, Thad Snoddy 2 (3.19-ac)	8000	3600
Gulf, Lacy-Snider 18 (107½-ac)	6400	3519
Humble, H. M. Lawrence 26 (164.7-ac)	8800	3650
H. M. Lawrence 27 (164.7-ac)	9000	3610
Magnolia, H. Hampton 29 (153.33-ac)	7400	3677
Manson Oil Co., T. A. Webb 7 (35-ac)	6500	3725
Navarro Oil Co., G. B. Tenery 3 (10-ac)	7200	3630
Pete H. Pewitt et al, L. A. Willi-ford 18 (133-ac)	1000	3668
Rajo Oil Corp., J. C. Barrett 13 (80-ac)	3000	3647
Shell, G. W. Richey 29 (167.38-ac)	9000	3622
Stanolind, Bun Rodden 11 (80.9-ac)	3500	3583
E. M. Whatley 15-A (51.76-ac)	7400	3546
Sun, J. C. Gray 15 (101½-ac)	50	3646
J. C. Gray 16 (101½-ac)	30	3658
Tide Water Associated, C. Fisher 9 (50-ac)	5000	3490
ANDERSON COUNTY (Long Lake)—		
F-H-E Oil Co., E. Tucker 1 (114.7-ac)	¶115	5411
FRANKLIN COUNTY— (Talco)—		
G-M-W Oil Co., O. E. Bolin 2 (12½-ac)	145	4347
Gray & Wolfe, O. E. Bolin 6 (36.95-ac)	345	4360
Humble, A. P. King 47 (1053.36-ac)	225	4316
T. L. Leake 3 (191.9-ac)	420	4296
Stroube & Stroube, J. A. Hedrick 5 (65-ac)	1220	4300
HENDERSON COUNTY (Cayuga)—		
F. M. Allison Prod. Co., Pettiette 7 (99¼-ac)	2500	4100
HOPKINS COUNTY (Sulphur Bluff)—		
Sun, B. W. Davis 2 (473.38-ac)	50	4526
TITUS COUNTY (Talco)—		
Housh & Thompson Inc., J. Hargrove 7 (75-ac)	405	4234
Humble, Monnig Dry Goods Co. 9 (114.4-ac)	282	4309
R. E. Moore Tr. (Sam Williams-Hugh Wilson), Edwards 2-D (5.7-ac)	275	4290
VAN ZANDT COUNTY (Van Field)—		
Pure, L. M. Brawner 13 (147.9-ac)	750	2884
CHEROKEE COUNTY—		
John DeMayo, Bunn & Rein, Holmes Bros.-Pure 1 (108-ac)	*	4153
HOUSTON COUNTY—		
Branch & E. R. Mount, P. S. Griffiths 1 (136-ac)	*	3609
MARION COUNTY (Rodessa)—		
Ark. La. Gas Co., W. T. Neilon 1, Thos. Gillespie sur	480	5996
George Barham et al, W. C. Whitfield 1, R. Bennington sur	504	6110
Fohs Oil Co., Mary McReynolds 3, A. de Los Santos Coy sur	216	6149
Union Producing Co., J. C. Hutchinson 5, A. de los Santos Coy sur	384	6092

*Failures; †Junked; ¶Million cu. ft. gas.

SOUTHWEST TEXAS

Two Trans-Salt Dome tests showing for production.

★ ★ ★

Deeper sand uncovered in Heyser, Victoria County.

★ ★ ★

Caldwell County wildcat making heads of heavy oil.

Corpus Christi.—Vicksburg trend on the western side of the Corpus Christi or Trans-Salt Dome sector of South Texas Gulf Coast gained prominence with two wildcats showing for possible producers.

Argo Oil Corporation's A. Soehnge 1, Delgado Grant, 1½ miles north of Mathis in San Patricio County, is testing through perforations at 4841-46 feet. Having been drilled to 6310 feet, it ran electric formation tester and set 5½-inch casing at 6225 feet. The tester indicated a sand section at 4836-56 feet and sidewall samples were taken which indicated saturation.

The test is three miles northwest of a test drilled previously by Willis Storm and three miles east of the Mathis gas field, which found production at a much shallower depth.

The new sand is approximately 80 feet above the Jackson, which places it well in the Vicksburg.

In Jim Wells County, Pratt & Tesmelis' (referred to by some as H. H. Howell) J. R. Talbert Estate 1, headed some mud and oil, building up 150 pounds casing pressure. Either the heavy mud or a bad cement job caused the well to continue to make mud and it has been recemented. The test drilled to 5530 feet, set 5½-inch casing at 5140 feet and was perforated at 5068-73 feet. It, too, showed possibilities of production when side wall samples were taken. The well is in La Vaca Grant, seven miles southwest of Alice.

After plugging back to 6750 feet, Magnolia Petroleum Company is preparing to perforate A. A. Seeligson 7, which is expected to open a deep Vicksburg sand field in southeastern Jim Wells County.

Deeper Sand at Heyser

Victoria County holds interest following the discovery of a new sand, first below 6,000 feet, in the Heyser field, and the showing of a wildcat near Telferner. Gulf Oil Corporation's T. P. Traylor 1, in the Heyser area, was deepened from 5753 to 6037 feet and on a drill-stem test recovered 1200 feet of pipe line oil under 75 pounds working pressure through ¼-inch chokes, top and bottom, in 10 minutes. Liner was set on bottom and completion is being effected through perforations.

W. V. Bowles & Company's Robertson 1, five miles southeast of Telferner, Victoria County, is drilling ahead after a sand section at 5630-43 showed oil and salt water. It has had several shows above this level which encourage wildcatting in the general sector.

Richardson Petroleum Corporation's Bertha Cunningham 1, 1½ mile northeast of the Luby field, Nueces County, is drilling plugs after setting casing to test the 4000-foot sand, producing in the main field. The test was carried to 5300 feet, reporting shale in the regular 5000-foot zone. The test is closed to information, hence any details concerning its shows are lacking.

Mills Bennett Production Corporation's attempt to open production in deeper sands in the South Clara Driscoll field, Nueces County, failed and Hubert Johnson 1 has been abandoned at 5689 feet. It recovered oil and mud from perforations in sand 5062-5115 feet, but turned to salt water and pipe is being pulled.

Caldwell County wildcat opening new field

San Antonio.—A new oil field in the Edwards limestone looms in northwestern Caldwell County with McNeill Petroleum Company's F. Moreno making several heads of heavy oil from 1749 feet. The test, four miles northwest of Lockhart, apparently faulted out the Austin chalk and a portion of the section below that to near the top of the Edwards zone. Lime, shale and a mixture of both formations was encountered to 1749 feet, where a broken lime section, possibly the Dobie section immediately overlying the Edwards stratum, showed considerable oil and gas. Seven-inch casing was landed at 1734 feet. November 16, it commenced flowing after being swabbed down to 700 feet, but the swab was lost in the hole and the test has been shut in without completion.

Estimates vary on the production, but the majority give at least several hundred barrels of heavy crude, probably 18 gravity, and similar to the oil produced in the Larremore field to the southwest.

The block consists of 2400 acres along trend of faulting determined by previous tests. The fault is referred to as Mule Creek and the pool likely will bear the

same name. Exact location of the producer is as follows: commence at easterly south corner of 56-acre tract, go northeast along southeast line 300 feet, thence northwest at right angles 500 feet in the Isaac Allen Survey.

Half interest in the block was acquired by Hantho-Nelson, Inc., but details of the deal are lacking.

Wellington Oil Company was not having as much success with its wildcat on the New Berlin prospect in Guadalupe County. A. Koepp 1, in W. H. Smith Survey, swabbed dry after acidizing the Austin chalk at 1520-1628 feet with 1500 gallons.

In Bastrop County, Hantho-Nelson, Inc.'s Litton 2, northeast of its recently completed Austin chalk discovery well, found the Austin chalk about 1903 feet, 80 feet higher than the first test, and was preparing to set casing.

In Atascosa County, L. W. Stieren has reached 3500 feet and is attempting another production test in T. A. Crawford 1, west of Anchorage. Casing is set at 2487 feet and will attempt to test the entire open hole, which includes a sand and sandy shale section, serpentine and chalk, all of which carried good oil odors.

Topping Navarro at 3100 feet, Amerada Petroleum Company is drilling below 3625 feet in Nelms 1, one mile southeast of the Pearsall field, Frio County. Formations are checking sufficiently high to make the well look interesting.

North Sweden extension try being watched

Laredo.—Frank J. Gravis' F. Vaello Puig 1-A, a half mile north and east of the North Sweden field, Duval County, was coring for the upper 4700-foot pay late in the week. It is holding prime attention in this area as a possible northeast extension. Its successful completion, which will open considerable acreage to development, is doubted by some who contend that the structure closes too rapidly in that direction. It, therefore, is of high importance from a geological standpoint.

The field proper continues its development in a southerly direction with outpost wells finding the sands sufficiently high to indicate that the area will be further widened in that direction.

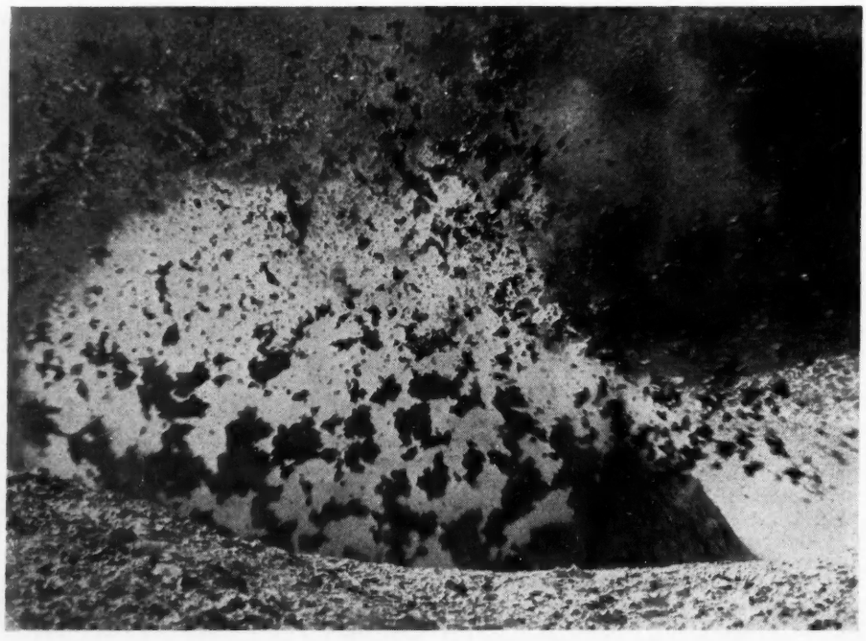
Magnolia Petroleum Company's D. Ruiz 1, four miles northwest of Benavides and in Section 190, was abandoned at 5485 feet, dampening interest in a prospect northwest of the Sweden sector. John H. Hougan's Patton 1, Section 148, five miles northwest of Benavides, shut down for some time is supposed to drill ahead from 3298 feet.

Efforts to extend the Thomas-Lockhart field to the southeast failed when Lockhart Brothers' Rogers 1, Section 277, was abandoned at 5502 feet. One miles southeast of the field, Taylor Refining Company's Parr 2, Survey 279, is drilling below 2250 feet.

Slaughter and Hugles' J. B. Hunter 1, Section 515, 1½ miles southeast of Loma Vista field, Duval County, set casing after running electric formation tester at 4732 feet, perforated at 3335-40 feet and swabbed salt water. It recemented and likely will make test through other perforations.

A slight northwest extension to the Cole sand gas production in the Peters area of Duval County was provided through completion of Gier & Kone's Peters 2, which flowed 26,000,000 cubic feet of gas after perforating at 1722-30 feet. The test attempted to widen the Mirando sand production, an oil zone, to the north, but failed and the well plugged back to the Cole sand.

A large gasser resulted in the completion of Darby Petroleum Corporation's Holbein 1-A, northeast offset to the discovery well of the Las Animas field, Jim Hogg County. The well drilled to 3808 feet without results, plugged back and perforated at 1765-82 feet, the Cole sand section.



Unusual picture of the cratered Texon Royalty Company's Eliff 1 making a head of gas. The well has been running wild for nearly a year. The blowout occurred as a result of the company's cratered Sevier well, 933 feet to the east. It is in Nueces County, South Texas.

McMullen County's highly interesting prospect explored by Adams & Lefevre had a set back when Margaret Selman 2 was abandoned at 2957 feet in Pettus sand topped 2920 feet. The test showed some oil saturation at 2505-13 feet in the Government Wells sand, but insufficient to make a commercial producer. The Mirando, topped at 2764 feet, was dry. This well is in Section 58, 2000 feet southwest of Selman 1, which had similar showings.

Ezzell Ranch field, McMullen and Live Oak counties, continues to be the hot spot of activity in the northern portion of the Mirando district. This shallow area had six more completions and eight new locations during the week with the next seven days expected to see a material increase in new producers.

Webb County's wildcatting campaign also shows an increase with several interesting tests being staked. One which will hold considerable attention is J. R. B. Moore's Garcia & Villareal 1, Section 338, one mile north of the Oilton pool, which is being drilled in an effort to extend that area.

SOUTH TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
LAREDO DISTRICT		
DUVAL COUNTY—		
Bridwell Oil Co., J. G. Ancira 7, sec 19 (N. Sweden)	450	4728
Pete Burton, Southland Life Ins. Co. 1, Ball Ranch subd N. Sweden)	¶10 & 25	4833
Continental, Sevier 20-A, V. Lott sur (Driscoll)	175	3351
Cox & Hamon, Greene 11, sur 118 (Hoffman)	52	2769
N. V. Duncan, Worden & Drought 16, sur 151 (Charamousca) (perfs 1506-12 ft)	456	1601
Gier & Kone Prod. Co., W. R. Peters 2, sur 38, 330 ft sl and el sw¼, near Peters field (perf 1722-30 ft)	¶26	2742
Government Wells Oil Co., H. A. Lundell 11, HE&WT sur 140 (Lundell)	125	1513
Gulf Stream, Inc., W. K. (Sophie) Hoffman 5-B, M. Ruiz sur 118 (Hoffman)	†	2904
Hiawatha O&G Co., M. M. Miller et al 3, blk 24 (Sweden)	¶10 & 50	5934
Lockhart Bros., R. J. Rogers 1, sur 277, 1000 ft sl and el of farm in w part of sur 277 (Thomas-Lockhart)	*	5502
Magnolia, DCRC 9, J. Poitevent sur (Piedre Lumbre)	90	2022
D. Ruiz 1, 990 ft s and e of sw cor sur 189, but in sur 190	*	5485
Navarro, T. H. Couling (Owen) 4, sec 19 (N. Sweden)	600	4771
Shell, Bishop Cattle Co. 13, sur 59 (Loma Novia)	165	2552
Bishop Cattle Company 14, sur 59 (Loma Novia)	85	2559
JIM HOGG COUNTY—		
Darby Pet. Co., Rueben Holbein 1-A, sec 7, Holbein subd (Las Animas) (perf 1765-82 ft)	¶12	3808
McMULLEN COUNTY—		
Adams & Lefevre, Margaret Selman 2, 990 ft wl, 330 ft nl of sw¼ of sec 58, A. Spalding gr	*	2957
Edwin M. Jones, Harry Ezzell 1-B, H. Russell sur 12 (Ezzell)	179	1559
Harry Ezzell 2-B, H. Russell sur 12 (Ezzell)	247	1541
Harry Ezzell 3-B, H. Russell sur 12 (Ezzell)	337	1523
STARR COUNTY—		
E. A. Graham, S. Villareal 2, por 38 (Samfordyce)	375	3032
WEBB COUNTY—		
Chas. H. Andrus et al, A. S. Billings 1, sur 10 (Lopez)	*	2263
Mills Bennett Prod. Corp., Maria G. Martin 2, sec 458 (Oilton)	*	2568
Cox & Hamon, Garcia 2, C. Hughes sur 262 (Oilton)	110	1906
A. A. Garcia, C. Hughes sur 262 (Oilton)	105	1910
Maria G. Martin 2, sur 1005 (Oilton)	120	1925

Company, Well and Location	Init. Prod. Bbls.	Depth
French Oil Corp., J. C. Perez 5, sur 1007 (Killam)	108	1998
O. W. Killam, Garcia & Villareal 1-B, sec 337 (Killam)	100	1988
J. R. B. Moore, Laredo Nat'l Bank sur 1005 (Oilton)	160	1922
Mrs. M. L. Ramirez 1, sur 1005 (Oilton)	165	1927
Navarro Oil Co., R. F. Perez 3, L. J. & A. A. sur 1007 (Killam)	80	1986
Smith & Hamill, Maria G. Martin 5, sur 2167 (Oilton)	120	1902
ZAPATA COUNTY—		
Wm. H. Winn, P. Ramirez et al 1, por 19, sh 2 (Lopeno)	¶25	2310
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
Atlantic, W. G. McCampbell Ranch 9-C, James Orrick sur (McCampbell)	210	7130
Mrs. Elizabeth Murray 1-D, blk 37 (McCampbell)	225	7290
L. L. Porterfield Est. 4-B, blk 10 (McCampbell) (perf 7183-86 ft)	100	7241
Norman W. Bertelson, Elizabeth Murray 2-A, blk 37, J. Orrick sur (McCampbell)	350	7127
Buckingham Oil Co. & Tom Graham, L. L. Porterfield Est. 3-D, sec 9 (McCampbell)	475	7140
Franston Oil Co., Mrs. Elizabeth Murray 1, blk 37 (McCampbell)	¶10 & 75	7240
BEE COUNTY—		
James R. Dougherty, Fee 1, P. Carroll sur (SW Normanna)	150	3670
BROOKS COUNTY—		
Dick Young, William Singer 5, sur 312 (Alta Verde)	*	1814
CALHOUN COUNTY—		
Humble & Plymouth, H. T. Marshall 4, A. Sisneros sur (Hyser)	475	5484
P. H. Welder 19-B, A. Sisneros sur (Heyser)	650	5490
DE WITT COUNTY—		
I. K. Howeth et al, F. G. Gips 1, Willis A. Moore sur, 660 ft due w of projected nl of Wm. Montgomery sur A-656	*	4304
HIDALGO COUNTY—		
Fohs Oil Co., F. B. Guerra 1, J. of Reynosa (Samfordyce) (perf 2904-8 ft)	100	3253
JACKSON COUNTY—		
Hargrove & Echols, Mike Strauss 1, A. N. Clare sur, 700 ft el, 150 ft sl 625-ac tr, A-12	*	6526
Texas Co., Mortgage Land & Inv. Co. 1, Morris & Cummings sur 3 (Ganado)	175	5102
JIM WELLS COUNTY—		
H. H. Presnall et al, R. H. Holmes Est. 1, SK&K sur, (Premont)	†	2257
R. H. Holmes Est. 1-A SK&K sur (Premont)	70	2350
Smith & Story, B. Dansard 1, center of tr 16 and 17, sec 72, Haleman subd of Seeligson Ranch, SK&K sur	*	3255
KARNES COUNTY—		
Luling O&G Co., C. W. Boyce 10, S. Still sur (S. Burnell)	550	3668
C. W. Boyce 11, S. Still sur (S. Burnell)	550	3668
LIVE OAK COUNTY—		
Lonnie Glasscock, H. S. Bonham 4, A. Glavecke sur 1 (Ezzell)	175	1486
Huisache Prod. Co., Nellie A. Blecher et al, blk 45 (Ezzell)	200	1500
Simmons O&G Co., L. A. Reagan Est. 3-B, Lewis Romero sur (Oakville)	75	2838
Southwest Drilling Co., B. Hill 1, blk 45 (Ezzell)	225	1525
NUECES COUNTY—		
Humble & Barnsdall, R. A. Gulden 7, blk 47 (Flour Bluff)	625	6656
L. A. Webb 9, sec 56 (Flour Bluff)	500	6656
Daniel McGahhey, Mat & Pat Cody 1, John Smith sur 25 (Saxet)	200	4166
Richardson Pet. Corp., J. B. Sedwick 11, John Dunn sur 312 (Saxet) (perf 4859-67 ft)	375	7365
Seaboard, Katherine L. Shaffer 2, Cuadrillo Colony Ditch Co. sur (Luby)	475	6059
Southern Min. Corp., Richard King 2, blk 6, 3333.34 el and wl, 4700 nl, King Farm Lots (perf 4017-20)	75	6219
Wellington & Seaboard, W. F. Lehman 1-B, sec 25 (London)	*	5006
REFUGIO COUNTY—		
Houston, F. B. Rooke 19, T. Mullen sur (Refugio)	650	6230
Illinois, Ira Heard 9-B, M. J. Ximines sur (Tomoconnor-Greta)	1200	5908
Quintana Pet. Corp., Clement Heard 6-A, M. J. Ximines sur (Tomoconnor-Greta)	2500	5925
Tom O'Connor 58-A, J. M. Swisher sur 5 (Tomoconnor)	2500	5940
Union Prod. Co., M. F. Lambert 65, J. M. Swisher sur 8 (Tomoconnor-Greta)	1250	6150
SAN PATRICIO COUNTY—		
Atlantic, Maryland Trust Co. 3, blk 23 (McCampbell)	150	7135
Magnolia, Corpus Christi Bank & Trust Co. 13, H. Hunter sur (Plymouth)	475	5887
VICTORIA COUNTY—		
George H. Echols, W. H. Bennett 6, J. E. Galban sur (Heyser)	225	5746
Magnolia, O. M. Lander 4, J. E. Galban sur (Heyser) (perf 5495-5505)	¶5 & 25	6250
SAN ANTONIO DISTRICT		
CALDWELL COUNTY—		
R. T. Belcher & Chas. Shreiner, Mrs. G. Moody 1, S. Seal sur (Dunlap)	80	2170
Heard & Heard, R. E. Brown 1, B. McCearley sur, 2800 ft nl, 1800 ft wl of sur	*	2695
Ralph R. Ogden, W. E. Dinges 2-A, Squire Damon sur (Dale)	30	2224
Spokane-Oklahoma O&G Co., Ed Starks 3, C. Crenshaw sur (Larremore)	25	1303
Taylor Ref. Co., A. J. Brown 1, J. H. Lea sur (Luling)	210	2157
GUADALUPE COUNTY—		
T. H. Coulter, August Engelke 1, Harriet Cottle sur	†	2012
Gulf, Thomas Dix 7, J. R. Robinson sur (Darst Creek)	270	2525
Riddle Oil Co., Ada Williams 2, Green Dewitt sur (S. Darst Creek)	†	2263
WILSON COUNTY—		
Pat Higgins, Mrs. Annie Higgins 1, A. Trevino sur, 1050 ft nl, 150 ft el, 120-ac tr	*	2403
Wm. D. Parkinson, O. F. Burney 3, S&J Arocha gr (Floresville)	*	705

*Failures; †Junked; ¶Million cu. ft. gas.

Two Hidalgo County wildcats interesting

Mission.—Hidalgo County's two wildcats were in the spotlight following setting of casing in one and announcement that the other would be carried ahead to probably 8000 feet.

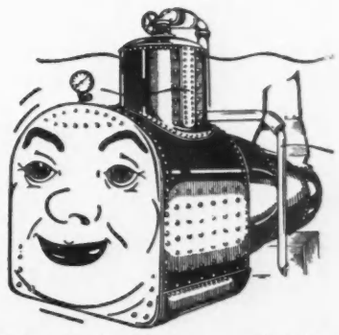
Atlantic Refining Company encountered a series of sands showing gas and distillate to 8505 feet, set 7-inch casing on bottom and cemented with 600 sacks. It likely will be drilled deeper in search of other sands, then plugged back if lower levels fail to materialize. The well is American Rio Grande Land and Irrigation Company 1, Section 175 of the Llano Grande Grant, 2½ miles southwest of Weslaco.

Y. & B. Oil Company was moving in rig to deepen Waite Brothers 1 after stopping at 5558 feet in the Vicksburg topped around 5120 feet. A sand at 5399-5422 feet showed gas. The well, in Share 382, is five miles southeast of the Samfordyce field and is six miles southwest of Mission.

Transwestern Oil Corporation's Slick School 1, Section 266, in Starr County, recovered most of the stuck drill pipe and was preparing to set a protection string of casing and sidetrack the remainder of the junk. The well is bottomed at 6860 feet with the pipe recovered to 6702 feet.

Willacy County's deepest test, Shell Petroleum Corporation's Yturria 1, at La Sal Viejo, is making a third drill-stem test of sand 8051-56 feet, 400 feet deeper than the discovery producing horizon.

"NOW LET'S TALK TURKEY!"



"This is the time of the year when we are all thankful for one thing or another. I'm thankful for my clean and economical record of steam production. Perhaps some of my boiler friends have not been so fortunate as to go the whole year without the semblance of scale or corrosion and without shutdowns and tube replacements. But here's where my 'turkey talk' comes in—

"Any boiler or engine can have the same Perfect Performance Record, regardless of the operating conditions or the nature of the water used. Just get your Boss to put you on the Sand-Banum Boiler-Health Diet. You don't have to take large quantities of harsh, and sometimes dangerous, 'chemicals' daily or hourly. Merely take a FEW OUNCES of this pure colloidal concentrate from one to four times per month.

"If your Boss wants to enjoy 365 Thanksgiving Days each year get him to send for their practical booklet 'HOW and WHY.' He can't go wrong because Sand-Banum is always sold on a 'Satisfaction or No Money' guarantee!"

AMERICAN SAND-BANUM CO., Inc.

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and at other convenient points including leading supply houses.

Orange extension finds new sand, flows 808 barrels.

* * *

After over 45 tests, Segno extension is completed.

* * *

Hastings still ranks as busiest field in district.

Houston.—Three fourths of a mile southwest of production at Orange, Orange County, Tillery and Ryan's Chesson 1, William Dyson Survey, discovered a new Frio sand and made 808 barrels of 35.3 gravity oil daily through a quarter-inch choke, with a tubing and casing pressure of 950 pounds, when completed at 5946 feet. Sand showing oil was logged at 5928 feet and seven-inch casing was set at 5930 feet.

It was surprising to many that the well would make 808 barrels daily through a quarter-inch choke because wells at Anahuac field, east and on the same strike, but in Chambers County, rarely make that much oil through the same size choke, and the latter field has around 100 feet of oil sand. Chesson 1 stopped in oil sand at 5946 feet and has not cored the full body of sand.

Segno Extended by New Sand

South of production at Segno field, Polk County, Gulf Oil Corporation completed Wing 8, I. & G. N. Survey, Section 15, flowing 737 barrels of 44.5 gravity oil daily through a quarter-inch choke with a tubing pressure of 1100 pounds and a casing pressure of 1200 pounds from Lower Saline Bayou formation at 6264 feet.

Wing 8 was perforated with 11 shots from 6261 to 6264 feet. The previous week a production test of this sand showed over 1000 barrels of fluid, 50 percent salt water, daily. Cement was squeezed through the perforations and salt water was shut off.

Wing 8 established some kind of a record for drill stem tests on a well. Over 45 of these tests were made while drilling to 6755 feet. Approximately 1200 feet of broken formation showing oil, gas, distillate and salt water were cored. The tests were made below the regular Upper and Lower Cockfield producing horizons.

East of Leggett in Polk County, National Standard Oil Company made location for a wildcat on the Carter Brothers land in the M. S. Womack Survey. The well is projected to 6000 feet. It is in the same area where Humble Oil & Refining Company drilled a dry hole some time ago

Fighting Salt Water at Cedar Bayou

Ingot Oil Company and Merit Oil Company are still trying to shut off the salt water in Wright 1, Cedar Bayou prospect, C. Smith Survey, Chambers County. Last week cement was drilled out to 6433 feet and a drill stem test was made to see if the cement had set. The drill stem test showed 60 percent oil and 40 percent salt water. A cement retainer was set and perforations at 6431 to 6433 feet were squeezed again.

North of production at Nome field, Jefferson County, Lee Oil Company abandoned Wilson 1, C. L. Nash Survey, at 7012 feet after coring salt water sands in Frio formation. Top of the formation was logged at 5814 feet and side wall samples at 5895 feet showed salt water sands.

On the Cheek prospect, south of Humble Oil & Refining Company's dry hole, Hebert and Smith made location for Broussard Trust 1, 466 feet from the south and east lines of a 40-acre tract in the C. Hillibrandt Survey, Jefferson County. The drilling contractor is Glenn H. McCarthy.

TEXAS GULF COAST
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
AMELIA—		
Humble, Crook 10	600	6774
ANAHUAC—		
Humble, Middleton 31	720	7080
BARBERS HILL—		
Texas Gulf, Kirby A-13	408	5524
FRIENDSWOOD—		
Humble, DeGeorge & Green 1	535	6080
HASTINGS—		
Stanolind, Curkeet B-16	552	6080
Curkeet B-17	602	6080
Curkeet B-19	556	6080
Droegemeyer 4	596	6080
Moore C-5	615	6080
Sneed 13	600	6080
R. O. Surface 9	565	6080
Turner 15	576	6080
Turner 18	535	6080
LIVINGSTON—		
Gem Oil Co., Kavanaugh & Collins 3	105	4241
LOCHRIDGE—		
Gulf, Baker 4	580	6364
MAGNET—		
Atlantic, Cockburn B-6	60	5540
MANVEL—		
Texas Co., Lemmer 5	438	4122
MARKHAM—		
Hamil & Hamil, Hudson 3	*	3864
OLD OCEAN—		
Harrison & Abercrombie, Smith 1	275	10,480
ORANGE—		
Tillery & Ryan, Chesson 1	808	5946
SEGNO—		
Gulf, Wing 8	737	6264
TOMBALL—		
Humble, Weatherby 1	144	5575
TURTLE BAY—		
Stanolind, Cooper Heirs 4	612	6599
WEST BEAUMONT—		
Stanolind, McCormack 8	488	5892
WEST COLUMBIA—		
Texas Co., Abrams 17	553	5515
Phillips 4	576	5746
Smith 2	572	5550
WITHERS—		
Texas Co., Pierce Estate C-32	100	5551
JEFFERSON COUNTY—		
Lee Oil Co., Wilson 1, n of Nome field, C. L. Nash sur	*	7012

*Failures; †Junked; ‡Million cu. ft. gas.

Completes 9, Locates 14

Stanolind Oil & Gas Company completed nine new oil producers at Hastings field last week and also made location for 14 new wells. The operators have several wells now at the sand and will be completed next week. Hastings continues to be the most active field in the Texas Gulf Coast.

The Texas Company had a good week at West Columbia field when three nice oil producers were completed in the new Frio sand. Each of the producers made over 550 barrels of pipe line oil daily.

Another 10,000-foot producer was completed by Harrison & Abercrombie at Old Ocean field, Brazoria County, last week when Smith 1, C. Breen Survey, came in flowing 275 barrels daily through various size chokes with a tubing pressure of 3570 pounds from Frio formation after casing was perforated with 25 shots from 10,470 to 10,480 feet.

The second well at Danbury to pick up the oil sand is Rowen Drilling Company and Shell Petroleum Corporation's Jamison 2, 660 feet west of Jamison 1, H. Austin Survey, League 6, Abstract 14. Top of the oil sand was logged at 1964 feet after drilling the sand to 1978 feet. Seven-inch casing was set at 1962 feet.

Trying Sandy Point Extension

Six thousand feet west of production at Sandy Point, Brazoria County, Henry De Arman was preparing to make another production test on Edmundson 1, D. Talley Survey. Casing will be perforated from 6557½ to 6565½ feet. Last week a production test from 6483 to 6492 feet showed salt water.

Four important wildcat locations were announced on the Texas Gulf Coast last week. Strake Petroleum Corporation made location for Strunk 1, in the Lissie area, Wharton County. It will be drilled to 8000 feet. On the Hillje prospect, Wharton County, The Texas Company announced location for A. Johnson 1 in the J. Bognal Survey. In the Huffsmith area, Harris County, Henry De Arman made location for Greseke 1, in the J. Bunker Survey. In the Carlos area, Grimes County, Hubert and Holt et al staked location for Greer 1, P. B. O'Connor Survey.

Chapman Minerals Corporation logged salt water sands in Sugarland Industries 1, south of Sugarland, G. Brown and Belknap Survey, from 5029 to 5279 feet and at the end of the week were drilling in shale at 5710 feet.

SOUTH LOUISIANA

Wildcat east of Woodlawn indicates new oil field.

★ ★ ★

Jennings outpost gets salt water on drill stem test.

★ ★ ★

Horseshoe Bayou test may get world's deepest oil.

Lake Charles.—Another new oil field is anticipated in Union Sulphur Company's Calcasieu National Bank 1, east of Woodlawn, Section 12-9s-8w, Jefferson Davis Parish. Last week the wildcat cored sands showing oil, and an electrical logging device was being run prior to the setting of casing.

Calcasieu National Bank 1 logged sand and shale with a good odor and cut from 8042 to 8047 feet, four feet of oil sand from 8047 to 8052 feet, four feet of oil sand from 8052 to 8057 feet, sand and shale with an oil show from 8057 to 8062 feet, shale from 8062 to 8112 feet. The core was missed from 8112 to 8117 feet, and sand and shale showing oil was logged from 8117 to 8139 feet. The well is 450 feet northeast of Strake Petroleum Corporation's 8505-foot dry hole which logged several sands showing oil and gas.

Extension Attempt Fizzles

South Jennings field, Jefferson Davis Parish, again looked disappointing last week when a drill stem test on Loffland Brothers' Fontenot 1, outpost test in Section 16-10s-3w, recovered salt water. The well was drilled to 9003 feet and 7-inch casing was cemented at 8943 feet. Casing was perforated with 95 holes from 8869 to 8894 feet. A 20-minute drill stem test of the perforated sand showed 3200 feet of salt water and distillate through ¼-inch chokes. Perforations have been squeezed with cement and another test will be made.

To Drill Plug

After letting cement set over a week in State QQ 3, Gulf Oil Corporation was preparing to drill plug at the end of the week in the Quarantine Bay wildcat in Section 17-19s-17e, Plaquemines Parish. Casing, 9⅝-inch, was set at 8144 feet after a drill stem test of sands at 8134 to 8143 feet showed 1500 feet of 34.3 gravity oil. It is believed the company will drill deeper. The well will open a new producing field in South Louisiana.

An important well drilling at Lake Hermitage field, Plaquemines Parish, is Gulf Oil Corporation's Lafourche Levee Basin District 7, Section 12-18s-25e. Last week the crew cored a sand at 8720 to 8745 feet which showed two ohms and 45 milivolts on an electrical logging device. The crew is coring below 8910 feet, being the deepest well at Lake Hermitage.

New Sand Discoverer Fishing

Humble Oil & Refining Company is having considerable trouble with Cockrell Moran 25, Lake Washington field, Section 35-20s-26e, Plaquemines Parish. Cockrell Moran 25 encountered a new sand showing oil at 6337 to 6356 feet. Seven-inch casing was cemented at 6347 feet and washing failed to make the well flow. Swabbing also would not bring the fluid to the top. Part of the swab line was lost in the hole and fishing has retarded completion.

North of Gibson field, Terrebonne Parish, Barnsdall Oil Company abandoned Dibert-Starks & Brown 1, Section 110-16s-15e, at 10,777 feet. The operators were attempting to pick up the Gibson or Lafitte sand.

The Delarge Oil Company has announced a wildcat location on the Dulac prospect in Terrebonne Parish. Buckley 1 is 660 feet north and 660 feet east of SWc Section 77-19s-17e. The well is being drilled on a likely geophysical prospect worked out by Fohs Oil Company. It is on the strike of Lirette, Lake Long, Gibson, and Lafitte fields. The well will be drilled below 10,000 feet.

Start One at Horseshoe Bayou

The second deepest producing field in the world may become the deepest again when The Texas Company's St. Mary Land Company 1 is finished drilling. The company plans to carry the well below 12,000 feet. It is 427 feet south and 3512 feet west of the northeast corner of Section 37-17s-9e, Horseshoe Bayou field, St. Mary Parish. The field is producing from below 10,800 feet. The discovery well, Horseshoe Bayou 1, blew out from below 12,000 feet and caught fire. The world's deepest production is in California, where a well is flowing from 11,300 feet.

The Texas Company has cleaned the hole made by State 1 at Bateman Bay, Section 21-16s-12e, St. Mary Parish, to 10,640 feet. State 1 was drilled to 11,879 feet and returns were lost. The hole was plugged back to 11,050 feet. Five-inch casing was stuck at 10,475 feet.

On the south side of Vinton field, Calcasieu Parish, Superior Oil Producing Company abandoned Grey 1, Section 4-11s-12w, at 6939 feet. It is reported that the well logged salt at 6900 feet, but this could not be confirmed. Rig has been moved 1000 feet south of Grey 1 to drill Grey 2. Superior Oil Producing Company is attempting to find deep flank production at Vinton.

Union Sulphur Company has announced another location south of Sulphur, Calcasieu Parish. American Oil & Sulphur Company 1 is 1652 feet south and 2000 feet west NEc Section 16-10-10w. It is also southwest of the same operator's Bell 1, Section 10-10s-10w. The latter well was running an electrical logging device at 8400 feet. Bell 1 has logged fresh water sands instead of salt water sands.

North Crowley field, Acadia Parish, is evidently defined in the southwest and southeast directions. Humble Oil & Refining Company's Zaumbracher 1, Section 4-9s-1e, drilling at 8478 feet in shale, failed to pick up the 8100-foot sand. Also Habetz 1, Section 3-9s-1e, southeast of the discovery well is drilling in sand at 8102 feet with no shows of oil.

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BAYOU BLUE—		
Humble, Wilbert 5	*	4534
CAMERON MEADOWS—		
Burton Sutton, School Land 19	*	5981
CANKTON—		
Superior, Savoy 2 (wo)	¶1½	5990
GARDEN ISLAND—		
Texas Co., State 24	364	4998
JENNINGS—		
Glassel et al, McFarlan 2	520	6975
LAKE BARRE—		
Texas Co., State 41	1771	3679
POTASH—		
Humble, Orleans Levee Board 15	*	914
ROANOKE—		
Humble, Devilbiss B-9	672	8835
VALENTINE—		
Pan American, Harange 12	*	6889
VINTON—		
Superior, Grey 1	*	6939
TERREBONNE PARISH—		
Barnsdall, Dibert-Stark-Brown 1, n of Gibson field 110-16s-15e	*	10,777

*Failures; †Junked; ¶Million cu. ft. gas.

Louisiana permits

Shreveport, La.—Seventeen drilling permits were authorized last week by the minerals division, Louisiana Conservation Commission. Ten permits were issued in North Louisiana, for the following parishes: Caddo, 4, including 3 in Rodessa; La Salle, 1; Ouachita, 1; and Union 4. Those in South Louisiana were for the following parishes: Acadia, 2; Calcasieu, 1; Cameron, 1; Iberia, 2; and Terrebonne, 1.

La Bahia test has high gas pressure

Goliad.—Goliad Oil Company's S. E. Cole 1-A, in the La Bahia pool of Goliad County, was perforating liner in the Cockfield sand in an effort to complete an oil producer. The test orignially set 8¼-inch pipe at 5441 feet, drilled to below 5600 feet and was shut down after high gas pressure was encountered. The well then was reworked, 316 feet of 5½-inch blank liner cemented to 5609 feet, and perforations were to be made above that level.

There have been several tests drilled on this prospect, either being junked or completed as gassers spraying distillate. This pressure is the highest encountered in any pool in the general Pettus district.

Jefferson nose of Rodessa extended two directions.

* * *

Attempt to extend Lisbon field looks like failure.

Shreveport, La.—Completion of four new wells in the Marion County, Texas, end of Rodessa, and three in the Miller County, Arkansas, part of the field last week brought the total of producers in the entire field to 835 oil wells.

The Jefferson end of the Marion County nose of the field was appreciably widened in two directions by two of the last week's completions. One mile south of production, Arkansas-Louisiana Gas Company's W. T. Neilon 1, Thomas Gillespie Survey, was completed at 5996 feet flowing 20 barrels of oil per hour through half-inch tubing choke with tubing pressure 975 pounds and casing pressure zero. The well is producing from the Gloyd, topped at 5946 feet; elevation is 200 feet.

Three-fourths of a mile northwest of production, George Barham and associates' W. C. Whitfield 1, R. Bennington Survey, which showed salt water with oil in the Gloyd topped at 6096 feet, was plugged back to 6090 feet and casing perforated at 6076 to 6086 feet and the well completed flowing 21 barrels per hour through ¼-inch tubing choke with casing pressure 650 pounds, and tubing, 150 pounds. Henderson sand, from which the production is coming, was topped at 6074 feet; elevation is 298 feet.

Completion of the four wells last week gave Marion County a total of 30 oil wells. Marion County has 18 other active operations of which 12 are drilling.

Miller County's three new wells gave a total of 41 producers—42 if Freeman W. Burford's 2-mile east outpost, August 1, SW SE NE SW 8-20-27, is counted, and it is averaging 50 barrels daily while being swabbed. Total daily average production there last week from the 42 wells was 12,615 barrels. Miller County has 24 other active operations of which 17 are drilling. There are 20 active operations in Cass County, Texas, of which only six are drilling. An outpost in this county, Union Producing Company's J. S. Hall 4, J. N. Jackson Survey, was preparing to set final casing string after showing 2800 feet of oil and 100 of mud in a drill-stem test in the Young in a 12-minute drill-stem test through ⅜-inch chokes at top and bottom from 6075 to 6087 feet, the latter being bottom of hole. This test had also shown oil and mud in a drill-stem test in the Dees horizon of 6041 to 6051 feet.

The Louisiana side of Rodessa has 13 active operations of which 10 are drilling. Freeman W. Burford's northeast outpost test on the Louisiana side of the field, U. S. Government 1, NE SE SW 6-23n-15w, Caddo Parish, was drilled to 6115 feet and 7-inch casing cemented at 6038 feet after slightly saturated lime was logged from 6031 to 6042 feet. Gloyd formation was topped at 6014 feet after logging Hill formation at 5880 feet. Massive anhydrite was logged from 5505 to 5753 feet; elevation is 346 feet.

Lisbon outpost test not showing favorably

Shreveport.—A three-quarter mile east outpost test in the Lisbon field last week was preparing to set final casing after logging some saturation in basal Glen Rose lime, but the amount and quality of the oil showing was far from satisfactory.

This test is Crescent Drilling Company's J. B. Fowler 1, C N½ SE NW 33-21n-4w, which with elevation of 295 feet, in a core from 5269 to 5285 feet, recovered 5 feet of soft gray slightly porous badly saturated oolitic lime; 1 foot of hard dense Coquina lime with spots of oil and 8 feet of dark gray fossiliferous shale.

Lisbon has 19 active operations under way of which 11 are drilling, including 3 that have set final casing string or are testing.

One location east of production in the Lincoln Parish or south side of the field, Magnolia Petroleum Company was preparing to drill plug and test Corbin B-1, NW NW 5-20n-4w, which topped porosity at 5241 feet; elevation is 240 feet. Also on the south edge of production, Tippett-Turman completed C. S. L. Patton 2, C S½ NW SE 1-20n-5w, flowing 61 barrels per hour through half-inch tubing choke at 5335 feet, after using 5,000 gallons of acid. Elevation is 314 feet and porosity was logged from 5324 to 5332 feet.

Drilling holes to repressure old Homer field

Shreveport.—Tidewater Associated Oil Company is drilling two holes in the old shallow Homer field for reported use as key wells in a repressuring project. The two tests are Garrett 15 and 16, located in Sections 18-21n-7w, and 17-21n-7w, respectively.

Standard Oil Company of Louisiana several years ago drilled one well as a key well for repressuring at Homer but did not carry through the project. Homer production comes from two shallow horizons, the Nacatosh and Blossom (Ozan) around 1200 and 2100 feet respectively. Daily average production is 2400 barrels.

A joint repressuring project among three companies in the shallow Haynesville field was successfully carried out several years ago. Haynesville produces from the Blossom at 2800 feet. The wells in Haynesville were drilled with mathematical exactitude, one well to every 10 acres, and the repressuring project there used each ninth well as a key well in the project of repressuring.

Shreveport.—Danciger Oil and Refineries, Inc., J. W. Tatum 1, Alfred Bissell Survey, Panola County, Texas, wildcat was shut down last week after testing salt water in the Blossom at 2700-2705 feet. Drilled to 6514 feet, it also made unsatisfactory tests at deeper levels.

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO PARISH (Rodessa)—		
Magnolia, M. S. Atkins 4, 7-23n-15w	¶10	6016
CLAIBORNE PARISH (Lisbon)—		
Tippett-Turman Oil Co., C. S. L. Patton 2, 1-20n-5w	1461	5335
LINCOLN PARISH—		
E. H. Moore, Inc., Commercial Bank 1, 22-18n-5w	*	6210
CADDO PARISH—		
Magnolia, S. J. Robertshaw 27, 23-21n-15w	100	1640
Stanolind, Dillon Heirs 130, 13-21n-15w	76	1700
W. H. Harrison Jr., Shoreline-Crystal Fee 1, 25-21n-16w	*	1020
Louisiana Oil Prod. Co., Muslow B-13, 42n-15w	200	2146
Surf-Maja Oil Co., Self 3, 10-20n-15w	200	2193
Stanolind, Dillon Hrs. 129, 13-21n-15w	29	1665
W. D. Ambrose, Pender B-4, 11-20n-15w	150	2204
W. D. Chew et al, Spell 2, 29-21n-15w	2000	1522
D. C. R. Oil Co., Dickinson 1, 15-19n-14w	250	2460
LA SALLE PARISH—		
Granstaff et al, Russell 1, 25-10n-1e.	15	1514
Pet. Heat & Power Corp., Wright 1, 26-10n-1e	250	1564
LINCOLN PARISH—		
Ludel Oil Co., M. L. Gill 1, 36-20n-2w	*	6000
MOREHOUSE PARISH—		
Southern Carbon Co., Tensas Delta 20, 3-21n-4e	¶5½	2180
OUACHITA PARISH—		
W. L. Ethridge, Phillips 1, 9-19n-4e.	¶1½	2230
Hope Prod. Co., Cole Hrs 1, 42-19n-4e	¶2½	2170
RED RIVER PARISH—		
Jones et al, B. W. Marston 1, 14-13n-11w	10	2547
T. G. Shaw, Wilkinson 5, 4-12n-10w.	50	2812
SABINE PARISH—		
Odell Hinson, Long-Bell Lbr. Co. 1, 5-8n-13w	5	1811
UNION PARISH—		
Interstate Nat. Gas Co., Fee 77, 31-21n-4e	¶26½	2150
Fee 76, 25-21n-3e	¶2½	2215
J. & H. Oil Co., Union Power Co. C-4, 16-21n-3e	¶2½	2270
Union Power Co. C-5, 16-21n-3e..	¶3	2240
Southern Carbon Co., Fee 70, 5-20n-4e	¶5	2183
Union Producing Co., M. A. Jordan 1, 11-21n-3e	¶2	2198
F. Williams 2, 6-20n-4e	¶7	2150
WEBSTER PARISH (Cotton Valley)—		
Magnolia, Aarnes-Cox 4, 22-21n-10w		768
WEST CARROLL PARISH—		
Rodessa O. & R. Co., C. H. Neely 1, 19-20n-11e	*	2350
WINN PARISH—		
Georgetown Oil Co., Tremont Lbr. Co. 1, 19-10n-1e	*	1635

*Failures; †Junked; ¶Million cu. ft. gas.

Lisbon Offers No Difficulty In Drilling and Producing

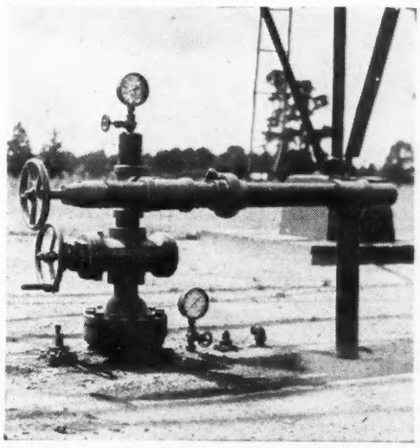
By BRAD MILLS, Associate Editor

OPERATING problems, while not exactly simple, are not difficult in the new Lisbon field, believed to be the most important North Louisiana discovery since Rodessa.

Drilling at Lisbon starts in the Claiborne formation, which has a thickness of about 943 feet. The Wilcox is found between 950 and 1490 feet, and the Midway occurs between 1500 and 2000 feet. The Nacatoch and Chalk rock (Anona) combined occur between 2000 and 2600 feet. The Blossom is encountered at about 2850 feet, and combined with the Tokio extends to 3450 feet. Top of the Glen Rose is found at 3450 feet, and at 3850 feet the first stringers of anhydrite are encountered. The massive anhydrite is topped at 4050 feet, and the last stringers of anhydrite are found at about 4350 feet. Below 4350 feet the ordinary Red Beds and lime sections of the Glen Rose are encountered. Immediately below the massive anhydrite, the formations that produce at Rodessa are found. They do not carry oil at Lisbon and only a few weak shows have been reported in these strata.

The drilling time ranges from 15 to 25 days, but the average elapsed time for completing a well ranges from 24 to 32 days. More than half of the drilling depth is in hard formation that requires rock bits. It has become the general practice to use rock bits through various formations that might be drilled with drag bits, the time required for making the change between hard formations having been greater than was justified. One drilling contractor uses nothing but rock bits below the 10-inch shutoff at 850 feet, since he has found it more economical to run rock bits continuously than to change to other bits in the soft spots. Other operators use drag bits with considerable success in drilling the soft formations. From eight to 15 bits are required for drilling each well. The average used has been reduced during the drilling of the last 40 wells. Lisbon is considered a very easy field to drill and few formation or mechanical problems are encountered.

The casing program is simple and as inexpensive as could be expected in a field producing from below 5000 feet. A 10-inch protection string is cemented at 800 to 850 feet. The formations below 850 feet stand up remarkably well, and open hole is carried to bottom without difficulty. The oil string run and cemented over the producing formation may be either 5½-inch O. D. or 7-inch O. D. casing, depending on the size of hole carried below the first shutoff. Grade C, rather than Grade D, casing is used by most of the independent operators, and the lighter grade has proved heavy enough for the field. Some Grade D casing has been run by the larger operators. The standard program with several operators has included 5½-inch, 17-pound, Grade C casing, and 7-inch, 24-pound, Grade C casing.



While simple, Christmas trees at Lisbon are sturdy enough to handle the pressures of flowing wells.

Completion practices have affected the action of wells on production tests, and because of the thin producing zone and necessity for inclusion of the exact oil-bearing section considerable completion trouble has been reported. Many wells that failed to flow probably would have made good producers, had casing been run properly and to the right depth.

Drilling equipment in use at Lisbon compares with that at Rodessa, or in 5000-foot fields of the Gulf Coast.

The lime section producing oil is found in one body in some parts of the field, but it is separated by shale streaks in others. Coring usually starts a short distance above the top of the lime section and continues to bottom of the producing stratum. All the larger operators are careful to examine the full thickness of the producing section. Before acidizing the formation, oil is circulated by the larger operators who wish to remove all mud from the lime section.

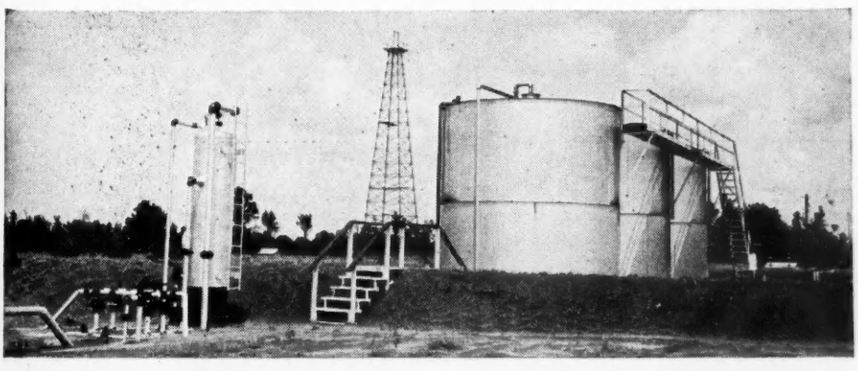
Acid is Used

Most of the wells are treated with acid before they are officially completed. The producing lime section is largely soluble in acid, and probably in no other field is the producing formation more favorably affected by the use of acid. From 3000 to 5000 gallons of acid is used in treating each well. Acid treating has lowered the gas/oil ratio in several wells that showed a small flow before treating.

The wells come in flowing from 15 to 100 barrels per hour. The gas/oil ratio of the first group of completions was remarkably low, having averaged about 250 cubic fet of gas per barrel of oil produced. Gas production now is considerably higher, and in a few wells has been a problem. The decline in bottom-hole pressure apparently has caused the gas to break out of solution, and in a few instances has formed small gas pockets because of the porosity.

No water occurs immediately above or below the producing formation. The producing lime section apparently is sealed off as well on bottom as on top, and the field is termed by some as a "non-water" producer. There is doubt that it derives any of its producing energy from water drive. The absence of water offsets several of the less desirable features.

Some of the drilling equipment now



A typical Lisbon tank battery includes two or three 500-barrel units. While separators were not required on early completions, they are in general use now.

in use at Lisbon was transferred from Rodessa, but it is possible to drill satisfactorily with lighter equipment than was used at Rodessa. The larger operators are providing a good margin of safety and power by installing drilling equipment suitable for drilling to 7000 and 8000 feet. A typical outfit of this type includes a 122-foot steel derrick; heavy unitized draw works; three 300-pound working-pressure boilers; 12 x 12 steam drilling engine; 18-inch slush pumps; 1-inch drilling line (or larger); 150-ton traveling equipment; and heavy duty rotary chain, hose and table. Steam power has been used almost exclusively because of local conditions and requirements.

Magnolia, Standard, Atlantic and Gulf are the major operators in the field, and two other majors are considering entry into the district with extension work. There are 26 independent operators in the field, with a few additional operators who will become active if extensions warrant development on outside leases. A recent extension to the southwest attracted new operators to the district.

Alabama leases renewed

Mobile, Ala.—Grand Bayou Oil & Gas Company of Mobile has renewed practically all its leases in Mobile County, Alabama. These were reported to have expired in the November 8 issue. The company plans to drill on its location in SW SW 24-7s-3w, on the J. A. Stafford farm, within the next 30 days.

ARKANSAS FIELDS

Schuler drilling aimed at Permian production

El Dorado, Ark.—Six tests in the Schuler field were below 6100 feet last week in search of production in the Permian lime. Alice Sidney Oil Company's D. S. Morgan 2, SE NE SE 18-18-17, after running electrical tester was reaming down to set 5-inch casing on bottom at 7700 feet. With elevation of 223 feet, this test logged top of the Permian lime at 7632 feet, as shown by the electric logging device.

Phillips Petroleum Company's Ed Gan 1, SW SE NE 18-18-17, was coring lime below 7636 feet after logged well-saturated sand from 7530 to 7604 feet; elevation is 232 feet.

These tests are passing up the lower Marine sand from which Edwin M. Jones' Marine Oil Company is producing, due to the type of oil secured therein, preferring to try for gas-distillate production in the Permian, which has proven highly satisfactory in the only well so far completed at Schuler in the latter horizon.

Other tests at Schuler drilling below 6100 feet are: Edwin M. Jones' Marine Oil Company 2, SW NW SE 17-18-17, top of the lower Marine sand (now known as the Jones sand) at 7580 feet; elevation 254 feet, coring 7648 feet; Jones' Marine Oil Company 4, SE SW SE 17-18-17, drilling sandy shale 6350 feet; Lion Oil Refining Company's M. Justiss 1, NE NW NE 19-18-17, drilling red sandy shale 6275 feet; Lion's Marine Oil Company 1, NE SE SW 17-18-17, drilling sandy shale 6128 feet.

Three other tests are drilling for the 7000 foot horizon at Schuler.

Two wildcat tests in Columbia County, which has been brought into the spotlight by recent proof that the Permian lime will produce at Buckner, in Section 8-16-22, were the center of interest in Arkansas last week outside Schuler and Miller County.

Tidewater Associated Oil Company and Seaboard Oil Company's C. N. Crumpler 1, C SW NE SW 24-17-19, was coring shale and anhydrite at 7515 feet after logging top of anhydrite at 7500 feet; elevation is 282 feet.

In the same county, Kerr-Lynn Oil Company's Barnett 1, SE SW NE 14-17-20, was coring sandy shale at 5795 feet, after logging one foot of porous sand at 5648-49 feet, that carried a good oil odor.

Standard Oil Company of Louisiana's J. P. McKean 1, C SW SW 8-16-22, Columbia County, that was completed four times as a commercial well at different horizons in Permian lime between 7204 and 7309 feet, before hitting the salt water level at 7280 feet, plugged back to 7257 feet, drilled out cement to 7258 feet and was washing with oil preparatory to testing. Elevation is 257 feet.

ARKANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MILLER COUNTY (Rodessa)—		
F. W. Burford, Ahern 4, 10-20-28..	150	6077
East Texas Ref. Co., J. O. Gerrald A-1, 15-20-28	750	6070
W. L. McClanahan, Capps A-4, 11-20-28	50	6075

*Failures; †Junked; ¶Million cu. ft. gas.

Schuler oil going to storage

El Dorado.—Edwin M. Jones is running 2000 barrels of oil daily to storage from his recently completed lower Marine oil producer in the Schuler field, due, it is said, to lack of a buyer. Up to November 10 Jones had run a total of 61,500 barrels to Root Petroleum Company storage at which time the latter purchased 20,800 barrels of this stored oil at the regular gravity-posted price of $1.05, on the same gravity basis as oil from the 5500-5900 foot horizon at Schuler.

Dallas, Texas.—Vacation period for employees of Magnolia Petroleum Company and Magnolia Pipe Line Company that have 15 years of service will be extended from two weeks to three weeks beginning January 1, 1938, according to announcement by L. S. Sinclair, vice president. Full pay will also be given during the extra period.

El Dorado, Ark.—Three drilling permits were authorized last week by the Arkansas Board of Conservation, as follows: Miller County—W. C. Feazel, J. W. Farmer 1, 1610.2 feet west and 545 feet north SEc 13-20-28; J. W. Farmer 2, 1000.7 feet west and 527.7 feet north SEc 13-20-28; Union County—Marine Oil Company, Fee 3, 280 feet east and 430 feet north SWc NW SW 17-18-17.

Department Store for Oil Men

Thirty years in the supply business have convinced us that few oil men like to shop around, scattering purchase orders like hand bills. So we are not haberdashers. Any operator can get a complete Fall outfit at any PELCO store. Ours is a one-stop service, a department store to the industry in our area.

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SHREVEPORT LOUISIANA

Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe
Cotton Valley—Turnertown
Greggton—Houston

EASTERN FIELDS

New fields found in Clay City and Clinton County.

★ ★ ★

Shell starts seismograph crew on 50,000-acre block.

Pittsburgh.—Clay City, one of several communities competing for the title of "The Oil Capitol of Illinois," joined Noble and Patoka last Tuesday when a strike was made within its boundaries. Vermillion Oil Company's C. D. Duff 1, in the eastern part of the village, cored an excellent McClosky sand and a drill stem test shot crude over the top of the derrick. Depth is 2985 feet.

The Noble Townsite area, Richland County, continues the hot spot in the central basin area. E. E. Hipple's Web Hanna 1, in the north end of the village and near other producers, flowed 1600 barrels with unusually high gas pressure the first 24 hours, one of the largest initials registered in the area. Its settled production could not be estimated as the week drew to a close. Nearby, Southern Illinois Petroleum Company's H. Allard 1, village discovery, is pumping 60 barrels a day. Drilling time on wells here is less than 15 days, indicating a number of early completions.

The latest count shows 22 derricks over Noble townsite locations. Intensive development of village leases was the logical result of Pure Oil Company's control of practically all acreage believed comprising the Noble pool outside the village limits. All of the townsite has been leased by independent companies and individuals.

A new field was indicated November 16 when Adams Oil & Gas Company's Louis Schmitz 1, 2½ miles northwest of Centralia, Clinton County, and 15 miles south of Patoka field of Marion County, found 26 feet of pay sand which was topped at 1348 feet. Production estimates based on a core indicated a 200-barrel initial. It found the Benoist pay almost 100 feet higher than wells in Patoka field, where the sand is from 10 to 15 feet thick. Originally intended as a deep test, the wildcat may be completed at its present depth.

Shell Petroleum Corporation has a seismograph party testing a block of about 50,000 acres in Jasper County, extending north of Newton to the Cumberland County line and southwest of Newton to the Richland and Clay County lines. Authority has been given the firm to dam up East Wet Weather Creek in Smallwood Township to obtain adequate water supplies for test hole drilling, and possible oil drilling in spring.

The joint wildcat test of Kingwood Oil Company and the Carter Oil Company on the Bartels tract, Section 26-6n-5e, Mason Township, Effingham County, is drilling below 4075 feet. It is the deepest drilling test in the basin.

Indiana drilling activity shows big increase

Indianapolis, Ind.—Indiana land under lease for oil and gas development totals more than 2,000,000 acres, according to a report made by the state division of geology to Virgil M. Simmons, commissioner of the department of conservation. The southeastern part of the state leads in activity, with drilling to be started on a number of locations within the next few weeks.

Successful development across the Wabash river in Illinois and completion of several producing wells in recent months on Indiana acreage is credited with the increase in activity in southwestern Indiana. Several major companies have participated in the leasing play.

The report, Simmons said, showed that as of November 1 drilling or testing was in progress on 40 wells, with 17 wells of which 8 were producers completed during October. Of the 8 successful completions, 6 were gas wells and 2 were oil producers. The remaining 9 were dry.

Active locations, including drilling and testing wells, by counties follows: Crawford 2; Daviess 2; DeKalb 1; Gibson 3; Hamilton 1; Harrison 1; Huntington 1; Jay 1; Knox 1; LaGrange 2; Perry 4; Pike 5; Porter 1; Posey 2; Rush 1; Spencer 3; Sullivan 3; Vanderburgh 1; Vigo 4; and Warwick 1.

Burrton hearing delayed

Wichita.—Gas-oil ratio investigation of the Burrton field of Reno and Harvey Counties, has been postponed from November 18 to December 16, according to an announcement from the Kansas Corporation Commission. Data requested by the commission and necessary to conduct the investigation have not been filed and many necessary field tests have not been completed, making the delay necessary. The hearing, scheduled to last three days, will be held at the Allis hotel here, beginning at 10:00 a. m.

General hearing on December oil allowables wil be held here November 23, at the Broadview hotel, at 9:30 a. m. New quotas for fields and percentages of production for wells within fields will also be fixed at that time.

EASTERN FIELDS

Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
ASHLAND COUNTY—		
Mehowa Oil & Gas Co., Leo Henley	¶3.90	3745
ATHENS COUNTY—		
Gross & McCune, E. G. Campbell 2	3	1173
Speary Oil & Gas Co., Robt. Smith 2	¶	1492
A. D. Townsend, W. S. Kelly	*	1799
Ohio Fuel Gas Co., Wm. Cohen 1	*	1300
Carpenter & Glazier, John Smith 19	*	245
Milhone, O. O. Bryson 11	*	950
C. A. Cody, O. F. Lowther 4	*	995
COSHOCTON COUNTY—		
Pure Oil Co., Harry Carpenter 4	5	3420
CUYAHOGA COUNTY—		
Walkers et al, Clara Carey 1	*	2515
GUERNSEY COUNTY—		
Moss et al, David S. Gibson 2	¶.50	1310
Geo. Jewell, Wm. Davidson 1	¶.35	1413
John Seward, John Killanny 1	¶	1145
KNOX COUNTY—		
Preston Oil Co., Helena Fesler 1	130	2830
LICKING COUNTY—		
G. H. Long, Nathan Loper 2	3	670
Rutledge & Moosholder Oil & Gas Co., Wm. E. Teagarden 11	1	672
MEDINA COUNTY—		
Ohio Fuel Gas Co., B. W. Nichols 1	¶2.13	3481
MEIGS COUNTY—		
J. M. Clark, H. A. Parr 1	1	2013
R. P. Johnson 1	¼	2003
Harry Smith et al, Athens & Pomeroy Coal Co. 3	¶.13	....
MONROE COUNTY—		
Cronin et al, Cronin 4	3	1226
N. V. Franchot et al, W. A. Delaplain 1	1½	1998
MORGAN COUNTY—		
G. E. Morris et al, W. C. & Daisy Harker 5	2	502
Burt & Son, S. B. Minor 12	2	505
MUSKINGUM COUNTY—		
Scott et al, Wm. Myers 4	100	3252
Sutton Bros., Ray Dedrick 1	5	4265
Midland Oil Co., Ella M. Denny 5	*	3170
NOBLE COUNTY—		
Bircher Oil & Gas Co., Bircher 1	¶.40	860
Mud Run Oil & Gas Co., Eleanor Bond 1	¶	....
John Yerian, Mallett Heirs 12	*	983
PERRY COUNTY—		
Mid-East Gas Co., Emma E. Williams	1	3209
Ohio Fuel Gas Co., Wm. H. Pettit 1	¶1.36	3180
STARK COUNTY—		
East Ohio Gas Co., J. Mikalas 1	¶1.00	4281
TUSCARAWAS COUNTY—		
Kenova Oil & Gas Co., James Hardwige 1	*	5054
VINTON COUNTY—		
Kelch Bros., John Gardiner 1	¶	....
WASHINGTON COUNTY—		
Lester Swingle et al, J. D. Murdock 6	3	615
Depuy Bros., Stegner 2	¶	1156
Swinger et al, Clarence Palmer 36	3	615
Clarence Palmer 34	*	571
Clarence Palmer 35	*	582
WAYNE COUNTY—		
Preston Oil Co., J. W. Scholl 2	30	3279

ILLINOIS

CLAY COUNTY—		
Pure Oil Company, Bussenden 2	350	3020
A. L. Moseley 2	250	2997
C. Wilkins 1	125	3030
Adams Oil & Gas Co., Fryer 2	15	1431
RICHLAND COUNTY—		
Ohio Oil Company, E. H. Arbuthnot 5	1260	2979
Mammoth Oil & Refining Co., Heitz 3	350	3000
C. L. McMahon, Murvin Bros. 1	*	3007

PENNSYLVANIA

GREENE COUNTY—		
Union Gas & Oil Corp., T. M. Gallentine 5	1	3493
Nelson M. Richards, R. Sammons 1	¶.36	3320
WASHINGTON COUNTY—		
Union Gasoline & Oil Corp., A. O. Vankirk 8	¶.51	2660
Geo. Gray, Tombaugh 1	¶.30	1502
Duquesne Gas Co., Carter Heirs 8	¶.15	2995

[*See next page*]

KENTUCKY

Company, Well and Location	Init. Prod. Bbls.	Depth
BRECKENRIDGE COUNTY—		
Kentucky Natural Gas Co., W. J. Robinson 4	*	548
DAVIESS COUNTY—		
S. J. Sirman, J. Johnson 1	*	1327
FLOYD COUNTY—		
Fred Williams, W. Honaker 2	25	2000
Southeast Gas Co., Joseph Dillon 3	¶1.90	1156
Hamilton, James Hatcher 4	¶1.50	1567
James Hatcher, James Hatcher 1	¶1.05	2980
Warfield Natural Gas Co., Mable S. Agassiz 4747	¶	2958
HANCOCK COUNTY—		
Frank Damron et al, Fred Boling 4	75	338
Homer Rice 3	¶.43	523
Marion Boling 2	*	540
C. D. Walker et al, Marion Boling 1	35	360
Cumberland Petroleum Co., Tilden Brown 3	*	690
Cane Run Petroleum Co., Robert Duke 4	*	555
HENDERSON COUNTY—		
H. Z. Clark, J. C. Wallace 8	75	750
JOHNSON COUNTY—		
Francis & Webb, James Wells 3	¶.14	....
KNOTT COUNTY—		
Warfield Natural Gas Co., Laura Frazier 4755	¶.33	2940
Stephens et al, Lee Gearhart 1	¶.13	2810
LEE COUNTY—		
C. E. Townsend, Andrew Combs 9	200	....
McLEAN COUNTY—		
W. H. Hupp, Hackett Bros. 31	*	1455
Hackett Bros. 32	*	1632
MARTIN COUNTY—		
Diederich & Ward, W. B. Stepp 2	30	1250
W. B. Stepp 3	6	1007
Kentucky-West Virginia Gas Co., C. W. Preece 8	5	887
Warfield Natural Gas Co., Sam Maynard 4751	¶.30	2681
H. L. Delong 4752	¶.21	2670
Southeast Gas Co., Hopson 779	¶.23	2603
OHIO COUNTY—		
A. Teller et al, Estill Board 6	10	....
Leeper Oil Co., L. C. McKinley 9	10	762
Cox & Lang, Ida Smith 1	*	292
Frank Randall et al, F. Taylor 3	*	615
Hupp et al, Annie Graham 1	*	622
PIKE COUNTY—		
United Carbon Co., Colony CC&C Co. 26	.51	3225
POWELL COUNTY—		
E. A. Wireman, Kinser Heirs 1	10	....
UNION COUNTY—		
H. Z. Clark et al, Walter Young 3	20	1165

WEST VIRGINIA

Company, Well and Location	Init. Prod. Bbls.	Depth
BOONE COUNTY—		
Owens Illinois Glass Co., Cassingham Coal Land Co. 28	¶44	2330
BRAXTON COUNTY—		
Pittsburgh & West Virginia Gas Co., Parkersburg Mill 7631	¶.75	1692
CABEL COUNTY—		
Sue Gas Co., H. S. Fraley 6	¶.26	1887
CALHOUN COUNTY—		
Hope Natural Gas Co., B. M. Siers 7790	¶.14	2000
DODDRIDGE COUNTY—		
Trainer Bros., Adam Wilson 1	¶.08	2521
GILMER COUNTY—		
W. Hayes Petry, Gilbert Reed 1	¶5.00	1486
Wilson Bros., F. B. Wilfong 1	¶	1610
KANAWHA COUNTY—		
United Carbon Co., Mona Bostic 1	¶16.50	4800
United Fuel Gas Co., Lizzie Sisson 4759	¶15.00	4784
J. V. & C. A. Ray 4756	¶11.16	4853
C. C. Fisher et al 4757	¶9.97	4750
Columbian Carbon Co., Nona J. Fogarty 1	¶8.15	....
J. W. Jones 1	¶4.00	4972
Poca Fork Oil & Gas Co., D. M. Canterbury 2	¶3.01	5063
Glen Oil & Gas Co., J. A. Haynes 1	¶.59	5310
Pond Fork Oil & Gas Co., Crowder & Thomas 1	¶.21	5209
Pure Oil Co., William Coal Co. 277	¶.32	2917
Ajax Gas Co., Dunbar Development Co. 1	¶.24	4095
LINCOLN COUNTY—		
Rich Forks Gas Co., Croft Land Co. 1	¶.30	3500
Guyan Gas Co., J. W. Jeffers 3	¶.05	3335
MARION COUNTY—		
S. N. Elliott, G. K. Atha	¶.75	2950
MARSHALL COUNTY—		
Hope Natural Gas Co., Joshoua Yoho 7779	¶.45	2189
F. J. Watson, J. Loudenslager 4	¶.15	3205
MONONGALIA COUNTY—		
Pittsburgh & West Virginia Gas Co., Myrtle C. Brand 3	¶.13	3215
PLEASANTS COUNTY—		
Simon Axelrod, Mary Radliff 4	1	827
RITCHIE COUNTY—		
McBurney et al, M. B. Nutter 6	18	1710
McDougald Oil Co., Jeff Barnard 2	5	1832

MICHIGAN FIELDS

Midland County wildcat showing oil production

Mt. Pleasant, Mich.—A wildcat test in a new district of Midland County and important extension completions in the Sherman-Isabella and Clayton-Arenac fields dominated Michigan developments for the week.

Sun Oil Company is testing State B1, Section 5-16n-1w, Edenville township, Midland County, at 3875 feet, swabbing 15 barrels on November 16. It logged Dundee limestone at 3801 feet and showed 1100 feet of oil in 5-inch casing 68 feet in the lime. This test is only three quarters of a mile north of a previously drilled wildcat which stopped at 4082 feet in August as a Dundee failure. It is two miles southeast of a restricted (about 100 acres) Dundee pool in South Beaverton township (17n-2w), Gladwin County. Sun Oil Company has virtually the entire area under lease, mostly state-owned acreage.

Swanson & Rowmor Company's Shepherd 1, Section 4-20n-4e, Clayton township, Arenac County, farthest west producer drilled in the pool, initialed 70 barrels an hour and produced 765 barrels the first 24 hours through 2-inch flow-line from 202 feet in the Dundee limestone. This is the first in more than 60 tests drilled in this field to show importantly in the Lower Dundee. Virtually, all big production, above 150 barrels daily, has been found in the Upper Dundee, about 20 feet in. It may lead to a deepening campaign, although numerous tests have picked up limestone black water below 180 feet in.

Pure Oil Company pushed the Sherman field (14n-6w), Section 5, two locations west with Skarrit 2, which initialed 230 barrels daily from the Monroe lime at 3,667 feet and increased to 570 barrels daily with a 1500-gallon acid treatment.

Company, Well and Location	Init. Prod. Bbls.	Depth
Howard McBride et al, Curtis Mitchell 1	2	1898
P. O. Burgy et al, P. C. Moats 1	¶.25	1725
W. A. Bickerstaff, Thomas Fordham 1	*	2204
ROANE COUNTY—		
Henderson Oil Co., F. H. Bee Jr 4	10	1708
WAYNE COUNTY—		
Owens Illinois Glass Co., J. G. Lambert 1	¶1.80	3360
WETZEL COUNTY—		
Brown Run Gas Co., A. L. Lough 1	¶.07	2980
WIRT COUNTY—		
Septer W. Douglass, A. C. Tucker 1	¶.13	1581
WOOD COUNTY—		
South Penn Oil Co., Lewis Ogden 22	10	2073

*Failures; †Junked; ¶Million cu. ft. gas.

MICHIGAN Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ALCONA COUNTY—		
Thalman & Morris, Kohlman 2, ne ne ne 10-26n-7e	*	3015
ALLEGAN COUNTY—		
Regal Dutch Pet., Campaigner 1, sw sw ne 7-4n-13w	*	1604
Goodman 1, sw nw nw 22-4n-13w	550	1615
Huges Heinig's Kleinbrick 1, nw nw ne 29-4n-13w	*	1640
ALPENA COUNTY—		
Lester Hemp, Potter 1, ne nw sw 36-32n-6e	*	900
ARENAC COUNTY—		
Weber Oil Co., Berry 2, se ne sw 4-20n-4e	50	2595
Swanson Oil Co., Shepherd 1, ne sw sw 4-20n-4e	1100	2610
McClanahan Oil Co., Buffalo 3, ne ne nw 10-20n-4e	60	2619
GLADWIN COUNTY—		
Sun, Luke 4, sw nw ne 10-18n-1w	1000	3660
Rabb 9, sw ne ne 10-18n-1w	200	3658
C. W. Teater, Adamets 5, ne sw sw 12-18n-1w	1000	3630
E. S. Beaver, Thompson 4, sw nw nw 13-18n-1w	700	3631
F. O. Whitelow, Fritzwater 4, sw se se 26-18n-1w	40	3630
Bell & Mark, Schember 1, ne nw nw 26-18n-1w	600	3588
Gordon Oil Co., Tergo 4, nw se ne 35-18n-1w	130	3595
State A-6, sw se ne 36-18n-1w	*	3650
Mt. Pleasant Drlg. Co., Raze 1, se ne sw 33-19n-1w	*	lcn.
MIDLAND COUNTY—		
Pure, Rayner D-6, s½ nw se 12-13n-2w	70	3432
MONTCALM COUNTY—		
J. W. McIntosh, Lott 1, ne se se 11-10n-5w	25	3179
MUSKEGON COUNTY—		
W. Mich., Burmeister 1, c nw 33-10n-14w	¶1	1265
OGEMAW COUNTY—		
Ross & Bernier, Weiler 2, se se sw 14-22n-1e	*	2928
SAGINAW COUNTY—		
Bond Oil Co., Schoonmaker 1, se ne ne 1-11n-1e	10	3200
Doran & Hillard, Dobs 1, nw nw se 33-11n-1e	*	3160

*Failures; †Junked; ¶Million cu. ft. gas.

Buckeye Is Michigan's Important Field

BUCKEYE in Gladwin County is the most important field in Michigan today.

Buckeye produces from the state's most prolific horizon, the Dundee lime, but this formation in the field has a greater thickness than at either Greendale or Porter, which have been the most consistent producers in the state. Therefore, the flow from the Buckeye field may prove of better staying quality than has been the history of most Michigan fields.

Wells were drilled in Buckeye Township prior to the discovery of Buckeye, but none were carried deep enough to tap the Dundee lime, which is found at about 3630 feet, or about 450 feet deeper than in the Crystal field.

Stratigraph of Field

The stratigraphy of the Buckeye field is similar to that in other Michigan pools, varying only in thickness of the series. The formations drilled through range in age from the questionable "Permo-Carboniferous Red Beds" to the lower Devonian. From the surface to about 300 feet is a glacial drift, which requires drive pipe when penetrating. Many large boulders

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Bridgeport Machine Co., Wichita, Kans. and Branches.

Louisiana Supply Co., Sulphur and Brimstone, La.

Oil Field Equipment Co., San Antonio, Tex.

Industrial Supply Company, Inc., Wichita Falls, Tex. and Branches.

Okmulgee Supply Corp., Okmulgee, Okla. and Branches.

Stephen H. McCabe, 508 4th St., San Francisco, Calif.

Viking Automatic Sprinkler Co., 2715 East 12th St., Los Angeles, Calif.

Herley Supply Co., 3006 Cherry Ave., Long Beach, Calif.

Tubular Sales Company, 811 W. Seventh St. Bldg., Los Angeles, Calif.

Barde Steel Co., Seattle, Wash. and Portland, Ore.

Star Drilling Machine Co., 550 Clinton St., Portland, Ore. and Akron, Ohio.

The Atha Supply Co., Zanesville, Ohio and Mt. Pleasant, Mich.

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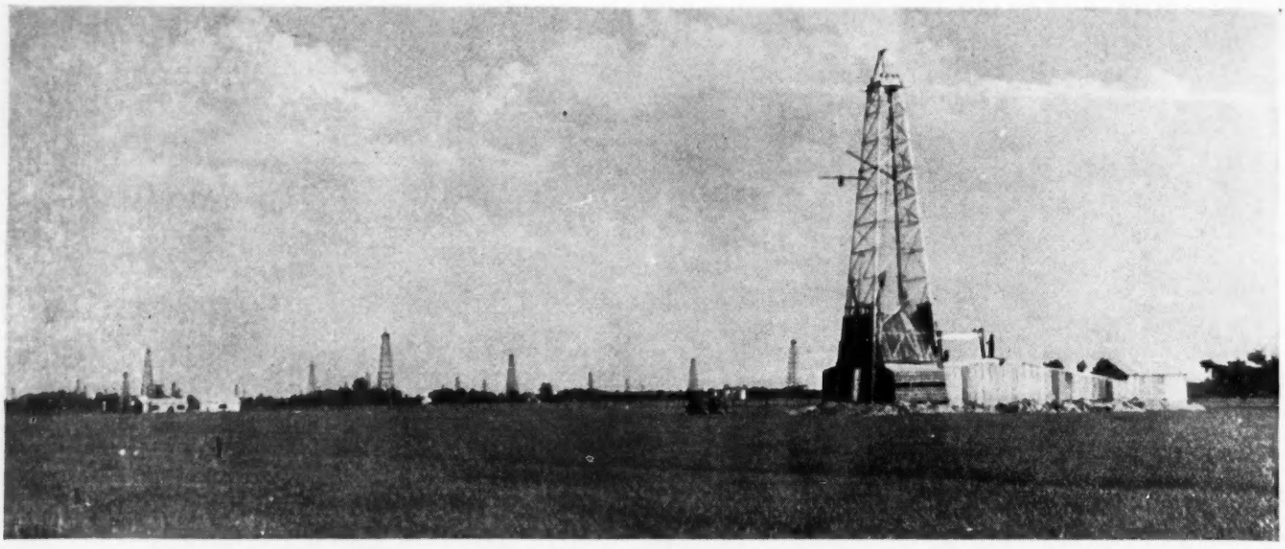
CHESTER

STEEL CASING AND LINE PIPE



Looking southeast across the north Buckeye field in Gladwin County, Michigan.

are interspersed throughout this gravelly bed, which causes considerable difficulty when the tools strike squarely upon an unusually large one. The next formation of importance is the Marshall section, which varies in thickness. This zone is made up principally of sandstone, and carries gas in commercial quantities in many parts of the state.

The Coldwater formation, lying directly below the Marshall, consists of gray and blue-gray shales, and usually is more than 1000 feet in thickness. Immediately below lies the Brea, which is described in drillers' logs as "grit," and has not proven of consequence in the field. The Antrim formation and the Traverse Group lie in sequence beneath the "grit." The Antrim consists of brownish black shales running up to 500 feet in thickness. Shells found in the Antrim show some pyrite and calcite, but very little. The Traverse Group are predominantly limestone, but carry some shaley limestone and limey shales.

The Dundee formation is represented by dolomitic limestone, with oil occurring in the upper part, which drillers describe as a "putty" lime. It is extremely easy to drill, with cuttings being almost absent after the first peneration. A very hard lime rests directly atop the top, which varies somewhat from well to well, and is easily recognized by the action of the tools. Much time is consumed in drilling through the hard formation, and hours have been spent watching the spring of the wire line before it is necessary to pay out the temper screw. But as soon as the softer oil bearing rock is touched, footage is made almost at will.

Structure Unknown

The structure of the Buckeye field has not yet been definitely determined, but because of the form of other fields, it is considered an anticlinal fold with a common structural trend extending northwest by southeast. No one has attempted to correlate the various well logs to prepare a definite map of possible extent.

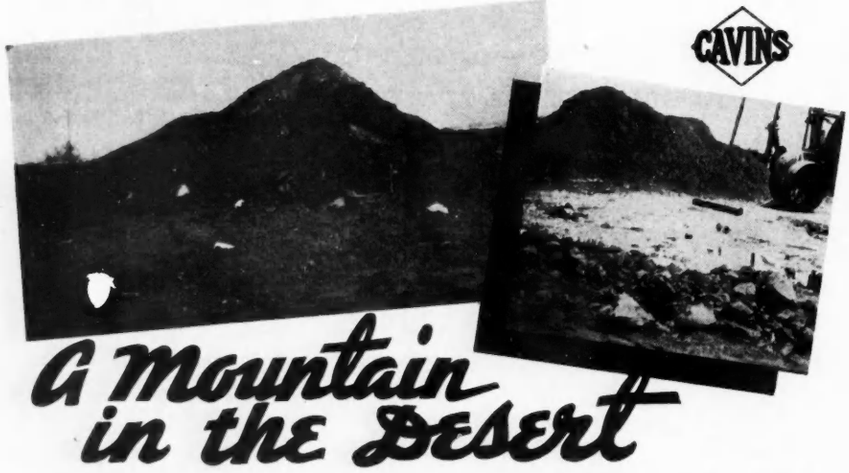
The discovery well was drilled in on January 1, 1937, by J. V. Wicklund Development Company. The test was the concern's State A-1, SW SW SE 11-18n-1w, and flowed at the rate of 730 barrels daily. Production is now obtained in Sections 1, 2, 3, 10, 11, 12, 13, 14, 15, 25, 26, 35 and 36 of the section.

Government offers leases to bidders

Washington.—Oil and gas leases in New Mexico and Wyoming will be offered to the highest bidder at sales to be held by the General Land Office on December 21, it was announced November 16 by the Interior Department.

At Las Cruces, New Mexico, the register of the land office will offer a lease embracing 119.86 acres in the Jal field, while at Cheyenne, Wyoming, a lease of 120 acres in the Rex Lake field will be offered. Both leases will be sold to the qualified bidder of the highest bonus.

The leases are technically described by the department as consisting, respectively of Lots 3 and 4, NE SW Sec. 31, T. 25 S., R. 37 E., N. M. P. M., New Mexico, and the SE NE and S½ SW Sec. 26 T. 16 N., R. 77 W., 6 P. M., Wyoming.



A Mountain in the Desert

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ROCKY MOUNTAIN FIELDS

Important Lance Creek test is planned

Casper, Wyo. — An important test west of Lance Creek production is planned by J. E. Manning and Hewitt Brothers. The operators, recent entrants, have acquired the lease to the Jessie Pecklow land embracing S½ 1-35n-64w, and will start a test in the southeast corner of the section within the next 60 days, to be located a half mile from A. B. Cobb's Novick-Ong 2, which flowed 2160 barrels of oil initial from the Minnelusa sand at 5237-5305 feet, and will drill to the Minnelusa. The Cobb well developed water in the Basal Sundance sand at 3980-4020 feet defining Sundance limits on the west side of the field. The well will mark an important extension test to the Minnelusa (Pennsylvanian) sand of Lance Creek. Manning formerly with the Perkins Oil Well Cementing Company has just recently stepped into the role of independent oil operator. The Hewitt Brothers for a number of years have been engaged in the refining and marketing of petroleum products in western Nebraska.

In the other extreme of the Lance Creek area, Continental Oil Company's Leach 1, SW NE NE 29-36n-64w, still remains a "mystery" well as far as developments in the Sundance and Minnelusa sands are concerned. Latest depth for the well reported is 6018 feet with formation not reported. It had oil saturation in the Dakota sand at around 3835 feet and is reported checking considerably higher than Argo Oil Corporation's well in Section 28, which has produced from the Dakota sand for a number of years.

Results are disappointing in the two deep tests of Ohio Oil Company and The California Company in the Big Medicine Bow field, Carbon County. William Kyle 3-A, SW NE 26-21n-79w, on the discovery lease, is showing for 10 barrels per hour in the First Sundance sand at 5733 feet. It drilled to 6765 feet through the Second Sundance which was dry and backed up to the first sand. Union Pacific-Cronberg 5, CNW NW 25-21n-79w, has been temporarily suspended at 5606 feet in the First Sundance where it encountered only nominal shows. Rotary equipment has been moved to Union Pacific-Johnson 6, SW SE 23-21n-79w, which is spudding.

In central Wyoming, the Sinclair-Wyoming Oil Company has its second deep test of the Wertz field near completion and looking for a considerably smaller well than the Tensleep discovery in the field. Wertz 11-A, SE NE NW 7-26n-89w, is swabbing 7½ barrels per hour from 5958-5987 feet in the Tensleep sand. It is down structure from Wertz 10-A, SE NW 7-26n-89w, which completed the past December for 1850 barrels of oil initial from the Tensleep at 5863-83 feet.

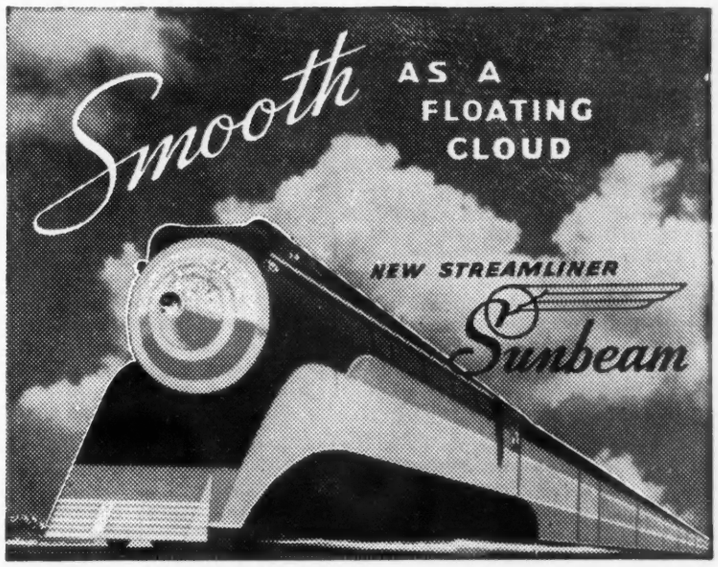
A near completion in the Shawnee light oil field, Wyoming-Southern Oil Company's Salisbury 3-A, NWc SE 27-32n-69w, Converse County, is recementing 6⅝-inch casing at 608 feet. Hole bottoms at 610 feet and oil rose 300 feet in the hole. Six other shallow wells are underway in the field. E. B. Jones' State 1, SWc 16-32n-69w, deep cable-tool test, is shut down at 4040 feet for the winter.

MOUNTAIN STATES

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
COLORADO		
ARCHULETA COUNTY—		
K. L. Kendrick Crowley 1, 2-32n-1e	*	1167
MONTANA		
GLACIER COUNTY (Cut Bank Field)—		
Texas Co., Tribal 8-122, sw se 6-32n-5w	35	2929
TOOLE COUNTY (Kevin-Sunburst Field)—		
New Era Fuel Corp., Goedertz 2, w se sw 12-35n-3w	75	1538
Capital Oil Co., Pace 1, cse sw 27-36n-1w	6	2250
WYOMING		
NIOBRARA COUNTY (Lance Creek Field)—		
Ohio Oil Co., Carrie Putnam 9, ne nw 4-35n-65w	850	4186

*Failures; †Junked; ‡Million cu. ft. gas.



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AR. HOUSTON . . . . . 9.00 P.M.

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LV. HOUSTON . . . . . 4:00 P.M.
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J. T. MONROE, Passenger Traffic Manager, Southern Pacific Bldg., HOUSTON, TEXAS

CALIFORNIA FIELDS

Rush for drilling permits in Wilmington extension.

* * *

Superior will drill offset to Rio Bravo discovery.

Los Angeles.—The Long Beach Harbor extension of Wilmington field may get off to a slow start, but companies holding important leases are losing no time in filing applications for permits to drill with the Long Beach Harbor Commission. During the first three day period ending November 15, when applications could be filed under the new ordinance, 50 applications were filed and are expected to be approved in a few days.

General Petroleum Corporation led with 19 applications, but the officials of the corporation have stated they will not rush the drilling. They will spot key wells and see what is found in the new area. Bankline Oil Company filed applications to drill nine wells, while Superior Oil Company filed a similar number. Union Pacific Railway Company wants to drill seven holes, and Richfield Oil Corporation filed three applications. Caminol Company and Long Beach Harbor Oil Company filed one application each.

Total applications to drill probably will exceed 100 during the first month following effective date of the ordinance on government operations in the new area.

No Gasoline Plants Allowed

The ordinance does not permit the erection of natural gasoline plants in the area and it is expected such plants now operating at Long Beach will lay lines to the Harbor area to pipe the gas to plants already in operation.

Wilmington is producing an average of 60,000 barrels daily, and the older area is not expected to show any further increases. The older wells are not holding up any too well. Decline of the present producers is slightly greater than the initial production of the new completions. One other single field in the state is producing more oil than the Wilmington field, and this is Kettleman Hills, which is exceeding 80,000 barrels a day. Wilmington has already outstripped Long Beach.

Offset For Discovery

The discovery well for the new Rio Bravo field in Kern County will have an easterly offset. Superior Oil Company will drill on the Wagner property, 990 feet south and 330 feet east from the west quarter corner of Section 35-28-25. Union's discovery well, Kernco 1-34, on November 15, was flowing 1588 barrels daily net, 39.3 gravity oil, cutting 3.2 percent. The flow is through 20/64-inch bean with 1900 pounds on the tubing and 2135 pounds on the casing. Gas production is 2,185,000 cubic feet daily. Pipe line connections have been completed and additional flow tanks erected at the location of the new well. Union apparently is in no hurry to start another well, due to large acreage under lease.

New Field Indicated

Ohio Oil Company is getting ready to complete Kern County Land Company E-3, Section 14-30-25, in the Strand area of Kern County. Bottom of hole is at 8175 feet and a string of 7-inch has been cemented at 8095 feet. A formation tester had been placed at 8065 feet and the well flowed at a 2100-barrel rate, indicating a new field for this section. Shell Oil Company holds important leases offsetting the Ohio acreage and is preparing to start a well to be known as Kern County Land Company A-72, 1014 feet south and 4276 feet east NWc Section 14-30-25.

A joint test being drilled by Standard Oil Company, with Continental Oil Company, Fullerton Oil Company and Superior Oil Company holding interests in adjacent leases, in the semitropic area of Kern County is showing some promise of being an oil producer. The well, known as Randolph Community 2, located 313 feet north and 2306 feet west SEc Section 14-27-23, bottomed at 7694 feet, has encountered very good oil showings. Gas also showed up in the cores.

General Petroleum Corporation ran into some disappointment with Houchin 1, in the Arvin area of Kern County. This hole, bottomed at 7928 feet, topped granite basement at 7921 feet. It is in NW Section 27-31-29, and when a formation tester was run at 7290 feet, the well indicated 104 barrels of 30 gravity oil practically clean in 16 hours. The hole will be plugged back to test upper showings.

Superior Oil Company's deep test in north dome, Kettleman Hills, Section 29-21-17, is preparing to core ahead after cementing 7-inch at 10,086 feet. This test in the productive area of the north dome is seeking the deep oil sand found by Kettleman North Dome Association's No. 4-18J, an edge test. This last named well had reached 11,746 feet, when drill pipe was stuck. So far, it has not been possible to recover all of this pipe. It is quite likely it will be necessary to plug back to point where it showed good for around 1200 barrels of oil daily.

An attempt to prove production below 10,000 feet is being made by Union Oil Company's Bell 100 in the old Santa Fe Springs field. It has reached 11,067 feet in a hard tight close grained sand formation. The well was tied up for several weeks after sticking drill pipe, which had to be sidetracked. Holders of leases at Santa Fe Springs are waiting for results of the deep well.

CALIFORNIA Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
RIO VISTA—		
Amerada, Deterding 1	¶	4377
SANTA MARIA VALLEY—		
Pacific Western, Hobbs 3	400	4264
YOLO COUNTY—		
Standard, E. E. Hooper 1	¶5	5181
FRUITVALE—		
Western Gulf, Red Ribbon 10	300	3570
KERN FRONT—		
Texas Co., Lehman 11	110	2057
McVAN—		
Hobee Oil Co., McVan 3	75	1185
MIDWAY-SUNSET—		
Brookshire Oil Co., No. 3	60	2524
Richfield, Fellows 14	105	1150
Standard, No. 2-25-L	15	3012
MOUNT POSO—		
Vanguard Oil Co., Baker 15	350	1759
LONG BEACH—		
Richfield, Davis 5	115	2760
NORTHWEST LONG BEACH—		
Hilldon Oil Co., Flood Control 3	245	4020
WILMINGTON—		
Bankline Oil Co., D. H. C. 8	10	3452
Colter & McAdoo, Colter 1	350	3646
General Pet., Ford 23	180	2950
Gus Pongratz, Nix Com. 1	200	3671
Royalty Service Corp., Price 2	200	3590
Union Pacific Ry. Co., Offset 60	510	3479
Offset 63	400	3359
Offset 64	300	3344

*Failures; †Junked; ¶Million cu. ft. gas.

California oil men form Petroleum Safety Board

Los Angeles.—At a recent meeting of representatives of independent oil companies of California, the California Petroleum Safety Board was formed with Melville Dozier, Jr., executive secretary. The meeting was sponsored by the Oil Producers Agency of California, and a safety director is to be selected at a later date.

A. A. Morey, safety engineer and prominent in safety circles in the Mid-Continent, was one of the principal speakers, pointing out the effectiveness of a cooperative safety program in other states.

Personnel of the Board includes: Frank Travers, South Basin Oil Company, chairman; L. L. Aubert, Bankline Oil Company; R. W. Metcalf, Signal Oil & Gas Company; C. E. Taber, Seaboard Oil Corporation; A. B. Jenks, Fullerton Oil Company, and Paul Stanley, Barnsdall Oil Company.

Adding combination unit at Texas City plant

Texas City, Texas.—Republic Oil Refining Company is adding a 10,000-barrel daily capacity combination skimming and cracking unit to its Texas City refinery to increase the daily throughput to 23,000 barrels. The new project will cost about $900,000, and is scheduled or completion in six months. The plant operates on controlled and purchased oil delivered from Southwest Texas fields by pipe line and barges.

IMPORTANT WILDCAT TESTS

ARKANSAS

CALHOUN COUNTY—Hayner et al's Brandon 1, sw nw sw 34-11-13, dr 3265 ft, sandy lime and pyrites.

CLARK COUNTY—M. M. Martin's C. L. Cabe 1, nw nw 14-10-20, dr 1975 ft.

COLUMBIA COUNTY—Kerrlyn Oil Co.'s Barnett 1, sw ne 14-17-20, logged porous sand, so 5648-49 ft, coring 5730 ft. Tidewater & Seaboard's C. N. Crumpler 1, nec sw 24-17-19, elev 282 ft, top lower Travis Peak 5420 ft, top lower red beds 7115 ft, coring red sandy shale and silt 7504 ft. E. O. Olds' Mary Dennis 1, nw se sw 4-17-21, sd 3925 ft.

DREW COUNTY — Sloan Wells et al's Hardy 1, sec nw 3-14-7, rur.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-26, sdtr, td 2944 ft.

LONOKE COUNTY—J. E. Russell's Gunter 1, se se 17-5-10, claim so 503-508 ft, sd repr rig 508 ft. Frank Silver's Chambers Est. 2, sw ne sw 17-2-7, wo 1500 ft.

MILLER COUNTY—Freeman W. Burford's August 1, 8-20-27, arr standardize, pb, td 6165 ft, old td 6230 ft. Odell Hinson's Montana Realty Co. 1, nw nw 3-17-28, pb to 5272 ft, perf csg, tested sw, testing.

NEVADA COUNTY—W. E. Lokey, Tr.'s Purifoy 1, 17-11-20, dr 2155 ft sand rock.

OUACHITA COUNTY — Copenhaver Oil Corp.'s J. E. Evans 1, ne sw 20-11-19, co 1730 ft. O. F. Whittaker's C. C. Guttry 1, se sw se sw 21-15-19, 100 ft oih, wosr, td 2180 ft.

UNION COUNTY — W. D. Wingfield's Southern Kraft 2, sw ne 18-16-14, 7-in csg 2721 ft, woc, td 2728 ft.

ALABAMA

CHOCTAW COUNTY—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, elev 120 ft, top Selma chalk 1865 ft, top Eutaw 2913 ft, top Tuscaloosa 3525 ft, top Paleozoics 6650 ft, dr 7240 ft, red and black shales.

GREENE COUNTY—Greene County Dev. Co.'s R. C. Lett 2, se nw 5-21n-2e, sd 115 ft.

HOUSTON COUNTY — Rice O&G Co.'s Oakley Est. 2, se nw sw 9-3n-29e, sd 4975 ft.

MOBILE COUNTY—J. C. Prine's King 2, ne ne 4-1n-4w, elev 135 ft, 10-in csg 300 ft, arr deepen, td 1100 ft (1100 ft s of No. 1).

CALIFORNIA

FRESNO COUNTY

DOS PALOS—Bergman Oil Co.'s Ora Loma 1, 12-12-11, sd 6006 ft.

CLOVIS—Central Valley Oil Co.'s No. 1, 1-12-20, dr shale 193 ft.

JACALITOS CREEK—Dauphin Dev. Co.'s Boone 1, 20-21-14, dr shale streaks gray sand 1894 ft.

PANOCHE—J. A. Cauthier's Hubbard 1, 12-14-11, dr shale 591 ft.

JACALITOS HILLS—Jacalitos Pet. Co.'s Associated 1, 14-21-15, dr shale 4675 ft.

HURON—Pure Oil Co.'s S. P. 1, 31-18-17, dr shale 8170 ft.

CIERVO—Superior Oil Co.'s No. 1, 20-16-13, grading lcn.

TRANQUILITY—Union Oil Co.'s Nicholson 1, 17-15-15, lcn.

KERN COUNTY

DEVIL'S DEN—Amerada Pet. Corp.'s Beer 5, 22-26-19, dr brown shale 3763 ft. Den Pet. Co.'s Bates 1, 20-25-19, sd 4716 ft.

LERDO AREA—Arkelo Pet. Co.'s Arkelo 41, 23-28-26, td 10,056 ft, redr to 7780 ft, sd.

WASCO—Continental Oil Co.'s K.C.L. A-2, 8-27-24, td 11,584 ft, fsh stuck dr pipe. Seaboard Oil-Tide Water Associated's K.C.L. C-1, sd 10,213 ft.

ROSEDALE—Continental Oil Co.'s K.C.L. B-1, 12-29-26, td 10,205 ft, redr at 7510 ft.

ROUND MOUNTAIN—Crestmont Oil Co.'s Staley 1, 8-28-29, rig. Freemont Oil Co.'s Olcese 2, 35-28-29, dr shale and silt 1550 ft. J. J. Tavis' Olcese-Tavis 1, dr sandy shale 3650 ft. G. D. Vedder's Bell 1, 12-28-28, td 1978 ft in oil sand, wocs 8⅝ in at 1954 ft.

ARVIN—General Pet. Corp.'s Houchin 1, 27-31-29, dr shale 7855 ft; Pauley 1, 22-31-22, foundation.

BELRIDGE—General Pet. Corp.'s St. Helens 1, 12-28-20, dr shale 3186 ft.

GRAPEVINE—Honolulu Oil Corp.'s Associated S.P. 33-1, 33-12-19, rur. Ohio Oil Co.'s T.R.C. D-2, 23-11-19, spud 11/9, dr. Universal Cons. Oil Co.'s Tejon 1, 33-11-19, dr shale 1050 ft.

STRAND—Ohio Oil Co.'s K.C.L. E-3, 14-30-25, td 8175 ft, in oil sand, wocs 7 in at 8095 ft. Shell Oil Co.'s K.C.L. A-72, 14-30-25, lcn.

KERN FRONT—Pacific Oil & Gas Dev. Co.'s Davidson 2, 36-27-27, rur.

McKITTRICK—Par-Mer Oil Co.'s No. 1, 6-31-22, dr shale 1500 ft. Rocima Oil Co.'s No. 1, 20-30-22, rur.

MOUNTAIN VIEW—Section Six Oil Co.'s Johnston 1, 6-31-29, dr shale 6353 ft.

KERN RIVER—Sleeper Ridge Oil Corp.'s No. 1, 15-29-28, sd 1435 ft.

TEN SECTION—Standard's K.C.L. 15-1, 27-30-26, dr shale 6864 ft.

SEMITROPIC—Standard's Randolph Com. 2, 14-27-23, td 7494 ft, in oil sand, oil and gas on ditch, changing mud.

McGUNDEN—Standard's Routzong 1, 2-30-28, dr sand and shale 4930 ft.

McFARLAND—Stone & Freid's No. 1, 34-25-25, rig.

MOUNT POSO—Paul F. Travis' Giffen 1, 31-27-28, rur.

GREELEY—Superior Oil Co.'s K.C.L. 9, 3-30-26, td 7870 ft, to test on pump.

MOUNT POSO—Paul F. Travis' Griffen 1, 10-27-28, rur.

SOUTH MARICOPA—Texas Co.'s Pioneer 1, 33-11-23, dr gray sand 4718 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abandoned.*
bbls—*barrels.*
br—*building rig.*
b.s.—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet.*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

RIO BRAVO—Union Oil Co.'s Kernco 1-34, 34-28-25, td 11,302 ft, flowing 1046 bbls 38 gravity oil and 1,578,000 cu ft gas, choked back.

MISCELLANEOUS

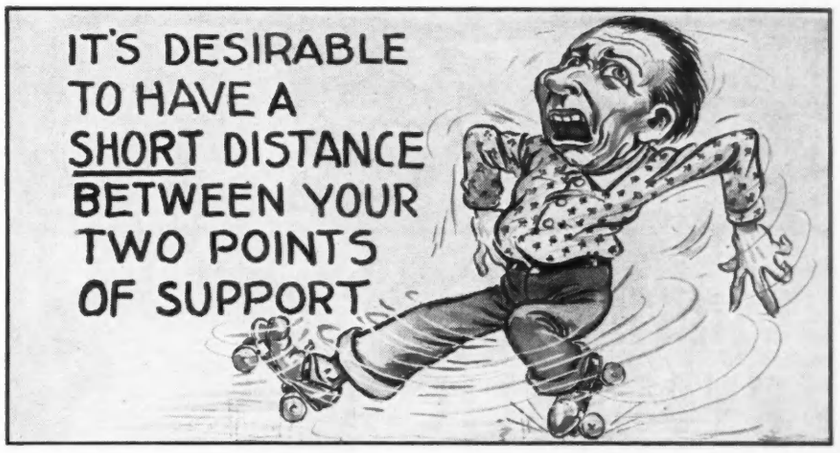
GLEN COUNTY—Ohio Oil Co.'s Willows 1, 18-20-2, rig.

HUMBOLDT COUNTY—Texas Co.'s Eureka 2, 22-3-1, td 7708 ft, plug 5737 ft, shut in pressure 2350 pounds.

KINGS COUNTY — Pyramid Prod. Co.'s Retherford 1, 27-24-18, dr shale 1063 ft.

MERCED COUNTY—Amerada Pet. Corp.'s Carano 1, 19-10-11, dr sandy shale 4763 ft.

SAN JOAQUIN COUNTY—Standard's Weil-Zuckerman 2, 25-2-4, td 5397 ft, ran formation



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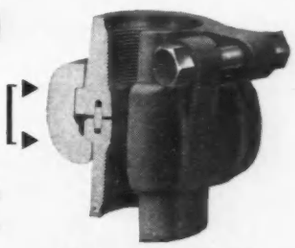

6000-lb. Test Steel UNIBOLT

THORNHILL CRAVER CO.
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tester 5195 to 5300 ft, good for 13,000,000 cu ft gas.

SAN MATEO—Wilshire Oil Co.'s Cowell 1, 20-6-5 (Half Moon Bay) dr shale 3354 ft.

SOLANO COUNTY—Amerada Pet. Corp.'s Deterding 1, 36-4-2, td 4377 ft, see completions.

SUTTER COUNTY—Buttes Oilfields' No. 3, 2-15-1, td 6051 ft, fsh.

TULARE COUNTY—Magnet Oil Co.'s A. O. G. 3, 29-24-24, sd 7555 ft. Standard's Crocker Est. 1, 6-25-24, lcn; Morris 1, 36-24-23, dr shale 10,020 ft. Trico Oil & Gas Co.'s Bryson 1, 28-24-23, td 2466 ft, shut in; Valley 2, 35-21-25, dr shale 3100 ft. J. F. Wilcox's Sears 1, 29-24-28, dr blue shale 750 ft.

YOLO COUNTY—Standard's E. E. Hooper 1, 32-9-1, td 5181 ft, gas well, shut in, see completions.

MONTEREY COUNTY—Amil A. Anderson's Hillman 1, 15-24-14, sd 1977 ft. Elba Oil Co.'s Elba 2, 6-12-1, rig.

SAN LUIS OBISPO COUNTY—Cholame Syn.'s Jack 2, 10-25-15, td 3641 ft, co. A. O. Lewis' Pecho 1, 34-30-10, sd 2750 ft. Little Cuyama Oil Co.'s No. 1, 3-10-26, dr shale 2410 ft. Temblor Oil Co.'s No. 1, 22-31-21, sd 3050 ft.

SANTA BARBARA COUNTY—E. C. Arnold's Arnold-Apache 2, 8-8-33, td 6370 ft, co. Carpinteria Oil Co.'s No. 1, 34-4-2, rur. O. C. Fields' Santa Rita 1, 11-7-33, sd 3358 ft. C. B. Gauthier's No. 17-1A, 22-4-26, lcn. Standard's L. F. Land & Oil Co. 1, 27-9-33 (Cat Canyon) rur. United Western Oil Co.'s No. 1, 16-7-30, sd 1032 ft. Vista Del Mar Oil Co.'s Williams 1, 16-4-26, sd 4120 ft.

VENTURA COUNTY—W. M. Lewis & Johnson 1, 15-1-22, (formerly Seven Seas Oil Co.), td 1038 ft, to resume dr. Oxnard Oil Co.'s Vanomi 1, 10-1-22, td 6302 ft, plug 6200 ft, sd. So. Calif. Dr. Co.'s W.P.D. 2, 26-2-21, td 1530 ft, wocs 13⅜ at 1105 ft. Richfield Oil Corp.'s McFarland 1, 13-2-21 (Camarillo Area), dr shale 5293 ft. Texas Co.'s Edwards 1, (Camarillo Area) rur.

SOUTHERN CALIFORNIA

WILMINGTON AREA—Alford Dev. Co.'s Classif. Yards 3, 22-4-13, dr shale 3266 ft.

NEWHALL—Barnsdall's Rancho S.F. 2, 26-4-17, td 5090 ft, redr at 3713 ft. West Coast Dev. Corp.'s Newhall Land 1, 27-4-16, lcn.

MONTEBELLO AREA — British American Oil Prod. Co.'s Pico 1, 3990 ft, ran formation test, r to bottom.

NORTH LONG BEACH—Geo. L. Clayton's Clayton 1, 32-3-12, sd 5967 ft.

PICO CANYON—Downey Oil Corp.'s No. 1, 36-4-17, dr hard sand 2432 ft.

PALOS VERDES—Hunter-Devlin & Associates' No. 1, 17-4-14, td 5502 ft, zone 5492 to 5502 ft wet, to pb.

WALNUT—Julian & Criswell's Langstaff 1, 5-2-9, sd 2855 ft.

PALOS VERDES HILLS—McClaren Bros.' No. 1, 27-4-14, td 3970 ft, redr to 1870 ft, sd; No. 2, rigged up and idle.

MONTEREY PARK — Monte Christo Pet. Co.'s Garvey 1, 27-1-12, rur.

CASTIAC — Royal Lands Corp.'s Ramona Hills 1, 8-4-17, dr hard sand 210 ft.

GARDENA—Texas Co.'s Gardena Com. 1, 30-3-13, rur.

ORANGE COUNTY—Shell Oil Co.'s Harbeson 1, 9-4-10, dr shale 7426 ft.

COLORADO

ARCHULETA COUNTY — Prospect Oil Syndicate's Garrett 1, sw sw ne 13-33n-2, dr 190 ft, 12½-in csg set at 168 ft.

LA PLATA COUNTY — Nick Spatter's Bryce 1, sw sw sw 31-33n-9w, dr 800 ft.

LINCOLN COUNTY — Gulf Oil Corp.'s Union Pacific-Smith 1, csw se se 19-15s-58w, dr 6505 ft.

MESA COUNTY — Midwest Development Co.'s Callahan 1, ne nw se 30-8s-97w, fsg 3337 ft.

MOFFAT COUNTY—Kerlyn Oil Co.'s Government 1, se se 19-9n-99w, drg Wasatch 3005 ft.

PITKIN COUNTY — Glenco Development Corp.'s Government 1, nw nw nw 9-10s-89w, dr 1150 ft.

PARK COUNTY—South Park Oil Co.'s Lemarr 1, ne ne se 34-11s-75w, set 8⅝-in csg 5335 ft, dr ahead.

RIO BLANCO COUNTY—Texas Co. & California Co.'s Freeman 1, cse nw 35-3n-94w, coring 6218 ft. Buford Oil Co.'s Government 1, cne ne 20-1n-91w, sd 2135 ft, preparing to run 8-in csg.

FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Expl. Co. 2, se se 17-24s-25e, elev 120 ft, arr set pck and retest at 2600 ft, old td 6126 ft.

LEVY COUNTY—Fla. Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, dr 1570 ft.

NASSAU COUNTY—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw nw se 19-4n-24e, elev 110 ft, dr 3750 ft, blue-black shale.

SUWANEE COUNTY — Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, re-setting 16-in csg at 190 ft, to eliminate caving hole.

ILLINOIS

BOND COUNTY — J. M. Huber Corp.'s Kunz 1, se nw nw 11-6n-5w, sd 2970 ft. Universal Wells Serv. Co. et al's Molder 1, nw nw nw 24-6n-4w, sd 118 ft. A. T. Whitehead et al's Pollan 1, nw se sw 26-6n-2w, sd 2633 ft.

CHRISTIAN COUNTY — Parshall-Graham Oil Co.'s Yockey 1, sw sw ne 36-15n-2w, dr to 2824 ft, pb to 1960 ft, acidized and swb sw. Rogers Bros. et al's Johnson 1, ne se se 27-12n-2w, set 10-in 60 ft, woc. Siegel & Schlosberg's Glass 3, nw nw sw 29-12n-2w, sd 1052 ft.

CLAY COUNTY—Southern Ill. Pet. Co.'s Knodacker 1, nw se sw 23-3n-7e, dr 1980 ft. C. H. & C. Oil Co. et al's Duff 1, cs½ nw ne 7-3n-8e, dr 2951 ft. J. E. Milburn's Striegle 1, se nw ne 19-3n-8e, der. Gulf's Laughton 1, nw ne nw 29-4n-8e, sd 3215 ft, woo. Bonnie Oil Co.'s Schnautz 1, se sw ne 31-4n-8e, der.

CLINTON COUNTY—Gross et al's Eversgerd 1, sw nw sw 22-1n-4w, sd 942 ft. Millkan & McGann's Lesseman 1, nw nw nw 36-1n-2w, abd 1630 ft. Adams O&G Co.'s Schmidt 1, se se ne 2-1n-1w, td 635 ft, reaming. R. E. Dalton's Clifton 1, ne sw sw 15-1n-4w, set 10-in csg 189 ft, woc. W. C. McBride's Schultte 1, sw sw ne 3-2n-4w, rust. Holley & Willis' Muex 1, ce¼ ne ne 18-3n-2w, rum. P. J. Campbell's Allen 1, sw sw nw 28-3n-2w, mach. Ellzy et al's Williams 1, sw nw sw 1-3n-1w, der. McClanahan Oil Co.'s Hester 1, cn¼ sw 26-3n-1w, td 1180 ft, run 8-in csg.

COLES COUNTY — W. J. Miller et al's Tomberlin 1, se se se 21-11n-10e, spd.

CUMBERLAND COUNTY—Jolly-Hill-Stipes et al's Jenkins 1, se ne ne 30-10n-9e, sd 1557 ft.

EFFINGHAM COUNTY—Kingwood & Carter's Bartel 1, ce½ ne nw 26-6n-5e, dr 3925 ft. Carter's Pruemer 1, cw½ sw ne 11-8n-7e, ru and ready to spd.

FAYETTE COUNTY—Belcher et al's Crawford 1, nw ne ne 35-4n-1w, spd 120 ft. Hurricane Creek Oil Co.'s Moore-Clayton Van Zandt 1, sw sw sw 24-6n-1w, C&P. Hausman et al's Northwestern Ins. Co. 1, csw ne 22-6n-1e, der. Oil Dev. Corp.'s Vance 1, se se se 16-7n-2e, abd 2164 ft. Carter's Miller 1, cw½ nw nw 12-8n-3e, 2000 gals acid, swbng 1700 ft. Schroeder et al's Lilly 1, se sw se 16-8n-3e, sd 1275 ft.

FRANKLIN COUNTY—Robert Markham's Whittington 1, ce¼ sw se 18-5s-3e, lcn. Washburn Pet. Corp.'s Neil 1, ce½ se se 6-5s-4e, sd 295 ft.

GREENE COUNTY—M. V. Yeager's Robinson 1, se sw nw 17-10n-11w, sd 175 ft. National Consumers Oil Co.'s Jackson 1, nw ne nw 21-11n-12w, bailing to shoot 2360 to 2372 ft.

HAMILTON COUNTY—Carpenter et al's Clark 1, cnw sw 32-2s-5e, junked 3324 ft, dr pipe stuck. J. Garfield Buell's Leach 1, cse se sw 22-3s-7e, cor 3397½ ft.

JASPER COUNTY—C. R. Overmeyer's Atkins 1, nw nw ne 3-6n-9e, sd 260 ft. LeWright et al's Wilkins 1, sw sw sw 36-6n-9e, c&p. W. R. Anderson's Hetzer 1, ce½ ne se 10-7n-8e, abd 2164 ft. Denver P. & R. Co.'s Ochs 1, nw nw ne 33-6n-14w, rig.

JEFFERSON COUNTY—Siegel & Schlosberg's Schneider 1, ne ne se 15-1s-1e, set 12½-in csg 60 ft, td 886 ft. Carter's Tate 1, cw½ nw ne 10-1s-2e, sd 3035 ft. Sturbois & Tomberlin's Osborn 1, cnw se 8-2s-2e, ru mach. Nollem & Benoist's Kelley 1, ne nw ne 25-4s-2e, dr 217 ft. E. J. Dees & W. J. Carter's Hamilton 1, ne sw nw 20-4s-3e, td 2921 ft, co 2865 ft.

JERSEY COUNTY—Boyd et al's Wyman 1, nw se nw 32-7n-12w, sd 930 ft.

MADISON COUNTY—Strauss et al's Robeson 1, nw se ne 16-3n-10w, dr 2770 ft.

MARION COUNTY—Dee & Nordan's Roddy 1, sw se sw 20-2n-3e, sd 2116 ft. Williamson-Taylor et al's Daniels 1, se¼ 18-2n-4e, set 10-in csg 125 ft, woc. R. Benoist's Belcher 1, nw se sw 3-3n-1e, set 6-in csg 1381 ft. T. M. Conrey's Thalman Estate 1, ne nw nw se 9-3n-1e, td 1514 ft, to core ahead. Shell's Lutz 1, sw ne ne 18-3n-1e, sd 1339½ ft. Target Drlg. Co.'s Zoller 1, sw sw se 17-3n-2e, abd 2500 ft. Marion Oil Co.'s Wilson 1, ne ne se 18-3n-3e, sd 1109 ft. Alexander et al's Allison 2, nw sw sw 33-4n-1e, td 1477 ft, sd. Coleman-Blosser's Britt 1, nw nw nw 36-4n-1e, dr 250 ft. Mahutske Oil Co.'s Nichols 1, se sw se 12-4n-4e, fsg 2625 ft.

MASSAC COUNTY—Kahle et al's Harvick 1, sw sw sw 23-14s-3e, td 2831 ft, to take cable tool core.

MONTGOMERY COUNTY—Schlosberg & Siegel's Nieman 1, cse sw 29-8n-5w, spd.

POPE COUNTY—C. C. Whitlock et al's Anthis 1, nw nw ne 12-11s-5e, sd 1352 ft.

RANDOLPH COUNTY—W. A. Delaney & J. E. Mabee's Wilson 1, ce½ se ne 3-4s-5w, dr 2375 ft.

RICHLAND COUNTY — Wiser Oil Co.'s Travette & Mattie Land Bank 1, cn½ ne se 8-2n-10e, dk. Hollingsworth O&G Co.'s Waggoner 1, ne nw nw 5-3n-14w, der. J. V. Wicklund's McCaulley 1, sw sw se 23-3n-8e, abd 3183 ft. Mammoth P. & R. Co.'s McCaulley 1, sw se nw 28-3n-9e, no shows to 3135 ft. Sam Raitman's Richey 1, cne nw 12-4n-14w, location. Bill Loving et al's Blue Ridge Church 1, ne ne se 26-4n-9e, bldg dk. C. L. McMahon's Fed Land Bank 1, 27-4n-9e, abd 3050 ft. Ray & Alford's Franklin 1, nw nw ne 34-5n-10e, rig. Kingwood & McMahon's Negley Bros. 1, nw nw se 31-5n-9e, dk.

SALINE COUNTY—Will Rogers et al's Saylor 1, se se se 3-10s-6e, dr 980 ft.

SCOTT COUNTY—Gregory & Mechling et al's Foltz 1, nw sw ne 31-14n-14w, sd 1196 ft.

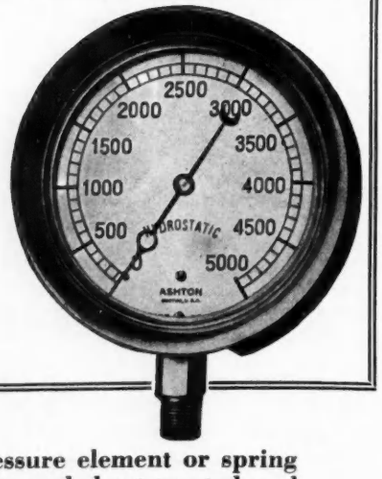
SHELBY COUNTY—J. A. English et al's McClory 1, se se ne 14-10n-6e, dr 162 ft.

WARDS COUNTY—Dr. W. F. Schmidt's Strenne 1, ne nw ne 5-1n-14w, mog. Leach Bros.' Lee 1, sw ne se 11-1s-10e, dr 2696 ft.

WASHINGTON COUNTY—Bittmer et al's Jesse 1, cse ne 16-3s-2w, mim.

WAYNE COUNTY — Benedum & Trees' Craig 1, se se sw 28-2n-7e, dr 2315 ft. J. W. Fitzpatrick & O. C. Meyers' Shannon 1, sw nw se 26-2n-8e, Aw 1500 gals, p. 180 bbls oil gross

ASHTON
HYDRAULIC
GAUGE



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WHITE COUNTY—Davis & Harrell's Poorman 1, ne nw nw 5-4s-8e, dr 2750 ft.

WILLIAMSON COUNTY—Edward C. Snyder's Fleming 1, cse ne 9-10s-2e, rig corners.

NORTH LOUISIANA

BIENVILLE PARISH—DeSoto O&G Co.'s Wm. Ashley 2, c sw se 15-16n-10w, rur. Gulf Oil Corp.'s Goodpine Oil Co. 1, se sw 25-14n-8w, elev 157 ft, top massive anhydrite 5303 ft, cored 16 ft porous oolitic lime, tested water and mud 5608-38 ft, coring 5721 ft. Hunt & Seaboard's Federal Land Bank 1, c s½ 10-16n-6w, 7-in csg 6857 ft, perf csg, testing td 6928 ft.

CADDO PARISH—A. O. Olsen's R. T. Sharp 1, nw nw 15-18n-16w, tested mud 4752-4812 ft, dr 5007 ft. Prairie River Synd.'s Hutchinson 1, sw nw 15-15n-12w, elev 153 ft, top lower Marine 8380 ft, top Bodcaw sand 8775 ft, tested sg 8987-9110 ft, arr deepen, td 9141 ft. W. J. Hunter & Homer Hurley's N. B. Stoer 2, sw sw 10-15n-15w, rur. A. D. Robinson et al's Dickson 1, 22-20n-14w, dr 1250 ft.

CATAHOULA PARISH—G. E. Foster et al's W. S. Peck 1, c s½ 39-10n-8e, dk and mir.

CLAIBORNE PARISH—J. B. Bond's Burgess 1, ne se ne 3-20n-5w, elev 276 ft, wosr, pb depth 5325 ft, old td 5800 ft. W. L. McClanahan's J. T. Lewis 1, sw se 25-20n-7w, dr 2910 ft. Union Power Co. et al's Brownfield 2, 6-19n-5w, dr 7426 ft. Triangle Drlg. Co. et al's Hawks 1, 1-19n-6w, owdd, td 4553 ft.

DE SOTO PARISH—Clear Lake Oil Co.'s J. A. Woolums 1, nw nw 29-12n-12w, cored sand so 2674 ft, wo 6⅝-in csg, td 2694 ft. Wright Harris et al's (Kingston Oil Co.) C. B. Scott 1, ne ne 32-14n-13w, co caving hole, td 2778 ft. La. Seaboard Oil Ref. Co.'s Lawrence 1, sw ne 36-12n-14w, dk.

LINCOLN PARISH—E. H. Moore, Inc.'s Commercial Bank 1, nw nw 22-18n-5w, fsg 6085 ft. E. T. Oakes, H. D. Easton et al's N. L. Griggs 1, c sw 36-18n-1w, 10-in csg 914 ft, dr 1200 ft.

RED RIVER PARISH—Ark. Fuel Oil Co.'s Franklin Realty Co. 1, ne nw 20-11n-9w, dr 1580 ft.

SABINE PARISH—Fox & Phillips' Cook Land Co. 1, 1-9n-12w, dr 2350 ft. Larry Romine's La. Long Leaf Lbr. Co. 1, 7-5n-12w, dr 4790 ft.

TENSAS PARISH—H. M. Jones' Chicago Mill & Lbr. Co. 2, rur.

UNION PARISH — Joe Modisett et al's Frost Lbr. Co. 1, ne sw 14-21n-1e, top Travis Peak 4050 ft, 9⅝-in csg 4358 ft, dr 4980 ft, red shale.

SOUTH LOUISIANA

ACADIA PARISH—W. C. Daniels' Setting 1, Trilby prospect, 17-9s-1w, dr shale 3649 ft. Gulf's Broussard 1, Midland area, 49-10s-2w, dr shale 8098 ft. Humble's Sarver 1, South Crowley prospect, 35-10s-1e, repairing boilers, 9732 ft. Magnolia's Duson 1, Iota prospect, 14-8s-2w, dr hard sand 8198 ft. J. G. Markley et al's Daigle Farms 1, Churchpoint area, 19-7s-2e, coring shale 8153 ft.

CALCASIEU PARISH—D. & D. Oil Co.'s Lutcher Moore 2, nw of Starks, 1-8s-13w, dr shale 9029 ft. Republic Prod. Co.'s Sabine Tram 1, w of Starks, 25-8s-14w, dr shale 8900 ft. Union Sulphur's American Oil & Sulphur Co. 1, s of Lake Charles, 16-10s-10w, lcn; same operator's Bell 1, s of Sulphur, 10-10s-10w, dr shale 8400 ft.

CAMERON PARISH — Humble's Miami Corp. 1, Catfish Lake area, 8-14s-5w, repairing boilers, 8825 ft. Shell's K. Bel Hanszen 1, Chalkley area, 22-12s-6w, dredging canal. Superior's State 1, in Gulf of Mexico, off Section 4-15s-8w, dr shale 6109 ft.

EAST BATON ROUGE PARISH—Cavalier Oil Co.'s Elliott 1, Hope Villa area, 3-8s-2e, dr shale 6602 ft.

IBERIA PARISH—Texas Co.'s State 2-B, in Vermilion Bay, 20-15s-6e, coring shale 8950 ft.

JEFFERSON DAVIS PARISH—Continental's Fay 1, se of South Roanoke, 31-10s-3w, dr shale 8586 ft. Humble's Stegall 1, nw of Welsh, 20-9s-5w, dr shale 5985 ft. Union Sulphur's Calcasieu National Bank 1, e of Woodlawn, 12-9s-8w, running electrical logging device 8139 ft.

LAFOURCHE PARISH—Amerada's South Coast corp. 1, Raceland area, 34-15s-19e, dr shale 9600 ft. Gulf's State PP 3, Timbalier Bay, 36-23s-21e, running geophones, 8728 ft. William Helis' City of New Orleans 2, Marchland area, 19-23s-23e, coring salt, 8223 ft.

PLAQUEMINES PARISH — Gulf's State QQ 3, Quarantine Bay, 17-19s-19e, dr plugs 8144 ft.

ST. BERNARD PARISH—Gulf's State RR 2, Lake Borgne, 38-14s-15e, dr shale 4080 ft.

ST. MARTIN PARISH—Shell's A. Frederick 1, Arnaudville area, 38-8s-5e, lcn. Shell-Tide Water's Unit 1, Lake Verret area, 11-14s-12e, driving piling. Texas Co.'s St. Martin Land 10, Henderson prospect, 15-8s-7e, coring shale 8302 ft; same operator's State 4, Lake Mongouloi prospect, 14-10s-9e, driving piling.

ST. MARY PARISH—Shell's Barbour 1, Glenwild prospect, 21-15s-12e, dr shale 7489 ft. Texas Co.'s State 1, Bateman Bay prospect, 21-16s-12e, cleaning hole, 10,640 ft.

TERREBONNE PARISH—Delarge Oil Co.'s Buckley 1, Dulac area, 77-19s-17e, lcn.

MONTANA

CHOTEAU COUNTY—Security Petroleum Corp.'s Johnson 1, cne ne 23-26n-3e, sd 1700 ft.

LEWIS & CLARK COUNTY—Coulter & Moore's Lewis & Clark 1, nw nw sw 11-18n-5w, ru.

PETROLEUM COUNTY—O. B. Canfield's Government 2, se se ne 21-17n-24e, dr 160 ft.

ROOSEVELT COUNTY—Poplar Dome Syndicate's Fry 1, nw nw ne 21-28n-50e, cmtg 6⅝-in csg at 1400 ft for water shut off.

TOOLE COUNTY—Montana Gas Corp.'s Clark 2, csw sw 24-37n-1w, cmtg 8⅝-in csg 2103 ft. Well showing 2,500,000 cu ft gas daily.

YELLOWSTONE COUNTY — Broadview Dome Oil Co.'s Halbritter 1, ne ne sw 18-3n-23e, dr 3400 ft.

MISSISSIPPI

CALHOUN COUNTY—B. G. Dowell's H. D. Hughes 1, 18-23n-9e, sd 1600 ft. Ed Spencer's J. C. Conner 1, se ne 12-24n-8e, lcn.

CLAIBORNE COUNTY—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, woc 10-in csg 200 ft.

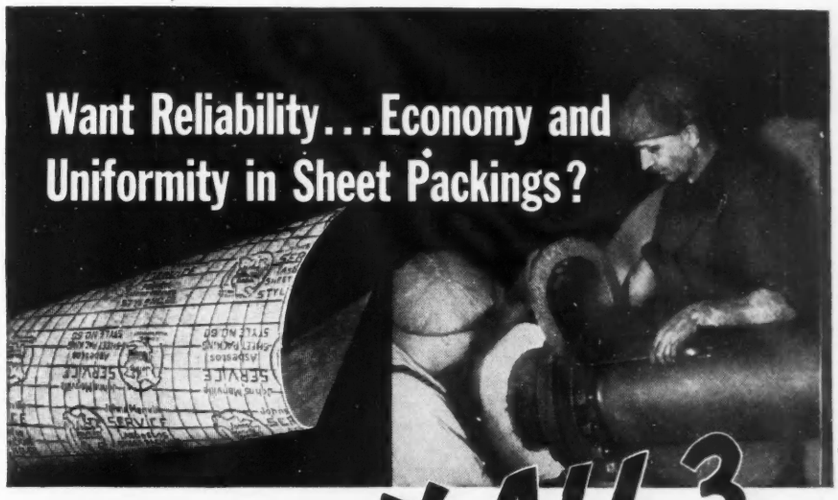
FRANKLIN COUNTY—Fred E. Courson's Homochitto Lbr. Co. 2, 300 ft n c 18-5n-3e, sg 756-62 ft, dr 3105 ft.

GEORGE COUNTY—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, spd, arr set 10-in csg 1500 ft.

HINDS COUNTY—Southern Nat. Gas Co.s' Angelo Williams 1, ne nw 35-6n-4w, elev 183 ft, 22-in csg 89 ft, 13⅜ in csg 416 ft, sd repr rig 2310 ft.

KEMPER COUNTY—R. A. Keaton et al's Buckwalter Lbr. Co. 1, nec 6-10n-14e, dk.

LAMAR COUNTY—Sun Oil Co. et al's



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Mrs. Kate Talley 4, se nw 33-4n-15w, dr 5562 ft, Selma chalk. South Miss. Oil Co.'s Morris 1, sec 4-2n-14w, spd and sd.

PERRY COUNTY—Phillips Pet. Co.'s J. J. Newman Lbr. Co. 1, se se sw 21-2n-10w, spd dr 600 ft.

SIMPSON COUNTY—Goodwill O&G Co.'s Berry 1, 33-2n-4e, woc 10-in csg 60 ft.

WILKINSON COUNTY—A. B. Taylor et al's Foster Creek Lbr. Co. 2, sw sw 31-4n-2w, dk and mir.

YALABOUSHA COUNTY—Acme Holding Co.'s S. D. Boyle 1, nw nw 33-25n-7e, elev 285 ft, sd 125 ft. Skuna Dev. Co.'s Mrs. T. A. Turner 1, se sw ne 25-25n-6e, sd 925 ft.

WEST TEXAS

(This report is confined to Ordovician, Delaware and prospects west of the Pecos River).

BREWSTER COUNTY—Floyd C. Dodson & Duffy's Texas American Synd. 1-A, near c ne ne GH&SA Ry. sec 66, blk 10, elev 4228 ft, top Delaware shale 2297 ft, top Simpson 5980 ft, trace gas, dr 6040 ft. Tony Hess et al's Mrs. M. Decie 1, sec 7, blk 1, Georgetown Ry. Co. sur, sd 925 ft. G. H. Storey et al's J. P. Wilson 1, c se nw of T. & St. L. Ry. sec 3, blk 212, elev 3609 ft, sd 2545 ft.

CRANE COUNTY—Gulf Oil Corp.'s M. B. McKnight 3, near ne sw ne of PSL sec 9, blk B-21, Ordovician test, elev 2693 ft, dr 3910 ft; W. N. Waddell et al 6, c ne sw of PSL sec 4, blk B-27, elev 2549 ft, Ordovician test, coring Simpson lime 5905 ft. Wilcox O&G Co. et al's M. B. McKnight 1, c se nw of G&MMB&A Ry. sec 9, blk 46, elev 2773 ft, top Yates 2380 ft, Ordovician test, fsh 6177 ft.

CROCKETT COUNTY—Moore Bros. Corp. et al's Paul Perner 1, c nw¼ of I&GN Ry. sec 37, blk 2, elev 2560 ft, Ordovician test, top lime 1600 ft, dr 7430 ft.

CULBERSON COUNTY—Jarrell, Earl Bell & Harrison's Caldwell 1, c sw of PSL sec 15, blk 109, Delaware test, sd 151 ft. Grisham-Hunter Corp.'s Fee 1, nwc sec 14, blk 42, PSL sur, Delaware test, mim.

JEFF DAVIS COUNTY — H. F. Wilcox O&G Co.'s Jones-Coffield 1, nec of H&TC Ry. sec 121, blk 4, to set 6⅝-in cas, td 3320 ft.

EL PASO COUNTY—Tri-State Oil Co.'s Chas. & L. M. Kinkel 1, ne ne ne sec 237, S. F. No. 7232, dr 3185 ft.

TOM GREEN COUNTY—Humble's Lewis & Wardlaw 1, near c ne se H&TC Ry. sec 5, blk 17, Ordovician test, elev 2142 ft, re-cem sur csg, td 1545 ft.

HUDSPETH COUNTY—Haymon Krupp Oil & Land Co.'s K. S. Briggs 1, nw nw nw T&P Ry. sec 24, blk 73, Tsp. 7, dr 1440 ft; S. J. Thaxton 1, near sec ne se T&P Ry. sec 34, blk 74, Tsp. 6, ur 3250 ft.

LOVING COUNTY—Barnett Pet. Corp.'s W. D. Johnson 1-A, se se ne T&P Ry. sec 12, blk 56, Tsp. 1, elev 3044 ft, Delaware test, dr 4100 ft; W. D. Johnson 1-B, ne se se T&P Ry. sec 2, blk 57, Tsp. 1, elev 2910 ft, top Delaware lime 3089 ft, top sand 3131 ft, show O&G&W 3153-74 ft, pb to 3131 ft, tested water, dry and abd. Carpenter, Grierson et al's B. Barnes 1, se se sw PSL sec 22, blk C-25, lcn. Michigan O&G Co.'s M. Kyle 5, ne ne se T&P Ry. sec 20, blk 55, Tsp. 1, lcn; M. Kyle 6, nw se ne sec 20, dr 1320 ft. Woodley Pet. Co.'s TP Land Trust 1, nwc n½ s½ of T&P Ry. sec 21, blk 55, Tsp. 1, cem 7-in 3745 ft, td 3750 ft

PECOS COUNTY — Aero Gas Ref. Co.'s Johnson-Skelly 1-A, n½ of H&GN Ry. sec 40, blk 8, dr 1280 ft. Mike L. Benedum et al's J. C. Trees 1, sw sw sw H&GN Ry. sec 9, blk 8, Ordovician test, elev 2528 ft, td 4488 ft, lost drill pipe, pb to 4288 ft to sdtr. F. A. Bond et al's O. W. Williams 1, near c sw se of GC&SF Ry. sec 3, blk 114, elev 2855 ft, temporarily abn 210 ft. E. P. Cravens et al's J. C. Trees 1, ne nw se H&GN Ry. sec 63, blk 8, sd 2273 ft. J. J. Dorr et al's Payton 1, near se nw nw of H&GN Ry. sec 99, blk 8, elev 2439 ft, dr 1940 ft. D. W. Francis et al's Westerman 1-A, nwc 186-ac lse, Rubian Phares sur, blk 166, elev 3155 ft, broken gas pay 2820-2850 ft, est 8,000,000 ft sweet gas daily, declined 50 percent while fsh tools. L. B. Hoss & F. J. Downey's Henry Cordez-Empire 1, nec of H&GN Ry. sec 81, blk 8, elev 2433 ft, dr 615 ft. Humble O&R Co.'s F. N. Belding 1, ne se sec 99, blk OW, elev 3085 ft, sandy-lime 2450-51 ft, increase in water 2557-60 ft, swabbed 70 bbls 16.6 gravity oil and 9 bbls water 6 hrs; fsh bit 2586 ft; H. H. Butz 1, sw¼ sec 104, blk OW, cem surface pipe; Ike T. Pryor 1, sw¼ sec 100, blk OW, dr 130 ft. Magnolia Pet. Co.-Superior Oil Corp.'s J. H. McKee 1-A, near nw nw sw H&GN Ry. sec 24, blk 9, Ordovician test, elev 2385 ft, (jkd twice), trace gas 3100-03 ft, cored 4909-14 ft, reported in Simpson, co to deepen. T. N. Sloan, F. E. Lewis and Sloan-Zook Co.'s Dow Puckett 1, sw sw sw of E. L. & RR. Co. sec 3, blk 100, trace oil 2860-75 ft, sd in sul water 2973 ft. Thompson & E. R. Minshall's Michaelson 1, c nw nw of T. & St. L. Ry. sec 24, blk 146, fsh 528 ft. Stanley A. Thompson et al's Elsinore Cattle Co. 1, se¼ of GC&SF Ry. sec 53, blk D, Ordovician test, elev 3938 ft, dr 6165 ft. Trans-Pecos Oil Co.'s F. M. Gallagher 1, ne ne nw T&P Ry. sec 9, blk 51, Tsp. 10, sd 1475 ft; Popham Land & Cattle Co. 1-B, s½ of GH&SA Ry. sec 235, blk 11 (3rd hole), sd 1275 ft. H. F. Wilcox O&G Co.'s Cerf 1, near c ne sw of T. & St. L. Ry. sec 27, blk 130, mim.

PRESIDIO COUNTY — Brite Production Co.'s L. C. Brite 1, ne¼ of GH&SA Ry. sec 113, blk 12, tested 2½ bbls oil daily at 4367-75 ft, sdo.

REEVES COUNTY—Barnett Pet. Corp.-J. C. Hill and Continental Oil Co.'s Ely-Healy 1, c nw of PSL sec 38, blk 71, elev 3166 ft, Delaware test, top Castile 865 ft, dr 1600 ft. Grisham-Hunter Corp.'s T. P. Land Trust 1, ne¼ sec 40, blk 58, T&P Ry. sur, Tsp. 6, lcn.

SCHLEICHER COUNTY—John M. Cooper et al's Bert Page 2, c ne se GH&SA Ry. sec 40, blk L, elev 2289 ft, Ordovician test, td 4710 ft, dr by 7-in cas 4575 ft. Tex-Tor Oil Corp.'s Judkins-Spencer 1, c sw¼ of A. & B. sec 33, blk A, Ordovician test, elev 2235 ft, dr 4220 ft.

SUTTON COUNTY—Ordovician Oil Co.'s J. T. Evans 1, ne ne ne sec 1, blk V-26, Lucy Stubblefield sur, elev 2126 ft, top Canyon, trace oil and gas 2320 ft, top Strawn, carrying water with oil odor 2860 ft, top Bend lime 3198 ft or 3315 ft, inc water 3495 ft, dr 3510 ft.

TERRELL COUNTY—R. A. Basurto et al's J. H. Phelps-Bates 1, near sec nw¼ sec 5, G. W. Turley sur A-4, Ordovician test, elev 2185 ft, sd 5600 ft. D. & S. Oil Co.'s Sam Bell 1, near swc ne sw of E. L. & RR. Co. sec 68, blk D-7, sd 345 ft.

WARD COUNTY—Magnolia's Geo. Sealy 1-79, c ne ne sec 79, blk F, G&MMB&A sur, Delaware test, elev 2622 ft, dr 3145 ft.

EAST TEXAS

ANDERSON COUNTY—Humble O&R Co.'s Southern Pine Lumber Co. 1-C (210-ac), John Morton sur, 2 mi ne Jarvis, elev 339 ft, top Woodbine 4284 ft, top Georgetown lime 5040 ft, top 1st anhydrite 7400 ft, dst at 7774-7911 ft, tested mud, coring 7915 ft. H. L. Parsons et al's H. B. Hemby 1 (213-ac), John Gossett sur, 7 mi ne Navarro, mim.

BOWIE COUNTY—King Oil Corp.'s W. W. Ames 1, J. A. Talbott sur, 4½ mi nw Texarkana, mim.

CHEROKEE COUNTY—Merica Oil Co.-W. L. Stone's Cherokee Dev. Co. 1, A. J. Acker sur, 2 mi e Maydelle, dk. John G. Mayo et al's Holmes Bros.-Pure 1 (108-ac), C. F. Noble sur, 3½ mi se Lone Star, elev 412 ft, Pecan 3110-3445 ft, Austin 3850-3900 ft, tested sw in Woodbine, dry and abd 4153 ft. E. H. Moore, Inc. et al's Chronister Lumber Co. 1 (800-ac), John Durst sur, blk 3, 3 mi ne of Wells, Pecan chalk 4630-4990 ft, Austin chalk 5490-5704 ft, top Woodbine series 5704 ft, top Georgetown lime 5905 ft, dry and abd 5925 ft.

DALLAS COUNTY—Mauldin Oil Co.'s W. E. Howell 1 (107-ac), S. Layton sur, 8 mi e Grapeland, dr 515 ft.

DELTA COUNTY—O. W. Killam et al's Delta Farming Assn. 1, J. Dollahite sur, 4 mi ne Sulphur Bluff, elev 348 ft, sd 176 ft.

FRANKLIN COUNTY—Stroube & Stroube's United Banks 1, nec tract, J. Bowman sur, 3 mi se Hagansport, dk then sdo.

GREGG COUNTY—Humble O&R Co.-Gulf Oil Corp.'s E. D. Robertson 1 (11.4-ac), M. Mann sur, 2½ mi w by s of Longview, 4 mi e production, elev 272 ft, Austin chalk 3202-3341 ft, top Georgetown lime 3341 ft, top Paluxy 4541 ft, top 1st Glen Rose 4876 ft, top anhydrite stringer 5617 ft, massive anhydrite 6214-6532 ft, trace gas on dst 6562-78 ft, dr 7050 ft.

HENDERSON COUNTY—E. B. LaRue et al's Breedlove-Mills 1 (232½-ac), J. Dunn sur, 5 mi nw LaRue, elev 485 ft, mim. Sherman Hunt, DeArman & McMillan's A. R. Dillard 1 (840-ac), H. Jeffrey sur, 9 mi sw Mabank, elev 361 ft, top Woodbine 3093 ft, top Georgetown 3720 ft, top Paluxy between 4689-99 ft, top 1st anhydrite between 5579-89 ft, massive anhydrite 5729-5899 ft, top Travis Peak 6429 ft, td 6518 ft, pb to 3138 ft, gun-perforated cas opposite Woodbine 3095-3105 ft, flowed 105 bbls 46 gravity oil 12 hrs via 20/64-in choke on tubing. Wm. McDougal, Tr. et al's Trinity Farm Securities Co.-R. M. Manning 1 (200-ac), H&TC Ry. sur, 4 mi s Malakoff, dk. Tide Water Associated-Seaboard & Humble's McElreath-Suggett 2-C (149-ac), W. P. Wyche sur, 1½ mi nw Opelika, elev 452 ft, top Georgetown 5070 ft, top Paluxy 6087 ft, top 1st Glen Rose 6282 ft, top anhydrite 6991 ft, massive anhydrite 7315-7713 ft, flowed water at 7830 ft, top Pettit 8510 ft, top Travis Peak 9073 ft, td 9320 ft, pb and gun-perforated casing 8795-8890 ft, tested 300,000 ft gas, testing.

HOPKINS COUNTY—Abbott & Rutland's Peyton 1-A, J. Burkham sur, 2 mi n Sulphur Bluff, elev 355 ft, dr 2100 ft.

HOUSTON COUNTY—E. R. Mount, ranch et al's Dr. P. S. Griffith 1 (136-ac), Frank Johnson sur, 3 mi sw Crockett, elev 415 ft, dry and abd 3609 ft.

HUNT COUNTY—Bauersfeld & Aue, Inc.'s J. M. Goin 1 (250-ac), Jas. Merrick sur, 2 mi sw Wolfe City, elev 606 ft, sd 1010 ft.

LIMESTONE COUNTY — Pure Oil Co.'s Kendrick 16-T (96-ac), 3 mi w Mexia and in field, elev 508 ft, top Woodbine 2896 ft, top Georgetown 3365 ft, top 1st Glen Rose 4270 ft, top broken anhydrite 5132 ft, Travis Peak series 5656-7676 ft, cutting out frozen drill pipe, td 8847 ft. Stanolind O&G Co.-Ramsey Pet. Corp.'s T. Norris 1 (40-ac), K. Thrasher sur, 5 mi n Kosse and on Thornton fault, elev 528 ft, Austin chalk 2791-2890 ft, top Woodbine 2980 ft, top Georgetown 3255 ft, top 1st Glen Rose 4026 ft, top 1st anhydrite 4886 ft, top Pettit 5375 ft, top Travis Peak 5523 ft, dr 6430 ft.

NAVARRO COUNTY — Nowlin, W. W. Lechner & J. S. Hudnall's J. Easterling 1, (209-ac), J. Mayor sur, 2 mi s Chatfield, elev 450 ft, top Austin chalk 1512 ft, dr 1600 ft. Mrs. Jane Robinson et al's Fortsan Bros. 1, Eli

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(see opposite page)
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Smith sur, 5 mi ne Corsicana, elev 345 ft, sd 1001 ft. Tom Sharp et al's E. B. McDowell 1 (65-ac), T. J. Jordan sur, ½ mi s Bazette, Pecan chalk 1089-2005 ft, top Austin chalk 2835-2935 ft, fsh 2970 ft.

RUSK COUNTY—J. W. Shipman et al's Citizens Nat'l Bank-L. T. Burton 1 (125-ac), J. J. Y'Barbo sur, 4 mi ne Henderson, elev 432 ft, base Georgetown lime 3676 ft, sd 4500 ft.

UPSHUR COUNTY—L. & G. Oil Co.'s Henry Williams 1 (315-ac), L. S. Von Roeder sur, 2 mi nw Gracetown, elev 304 ft, dk. J. K. Wadley et al's W. R. Thornton 1, P. Mauling sur, 3 mi sw Gracetown, elev 277 ft, dr 3275 ft.

EAST TEXAS BORDER COUNTIES

HARRISON COUNTY—Ark. Fuel Oil Co.'s (Cities Service), C. M. Abney 1, Eason Wilson sur, rur (Trinity test). Eastern Shrevetex Oil Co."s Mable George 1, J. S. Powell sur, wosr, td 2905 ft.

PANOLA COUNTY—Danciger O&R Co.'s J. W. Tatum 1, Alfred Bissell sur, massive anhydrite 4880-5175 ft, 5-3/16 in csg 6350 ft, tested sw at 5100 ft and at 2700 ft, sd, td 6514 ft. Magnolia Pet. Co.'s E. A. Hull 2, Thos. Applewhite sur, elev 222 ft, top Travis Peak 6024 ft, top lower Mar.ne 8078 ft, fsh td 8718 ft. C. K. Crews' J. C. Graves 1, McGowan sur, mim.

SHELBY COUNTY—Allen et al's George 1, C. C. Tutt sur, sd 2950 ft. C. L. Cope's Pickering Lbr. Co. 1, Stephen English sur, rur. Portex Oil Co.'s Pickering Lbr. Co. 3, A. Hanson sur, rur. Redditt & Gray's Pickering Lbr. Co. 2, S. O. Pennington sur, rur.

SOUTH TEXAS

SAN ANTONIO DISTRICT

ATASCOSA COUNTY—L. W. Stieren's T. A. Crawford 1, J. O. Crawford sur 69, dr 3382 ft.

BASTROP COUNTY—J. W. Bibb et al's O. B. Lentz 1, F. Wilkinson sur, dr Taylor 2294 ft. Hantho-Nelson's K. M. Litton 2, A. Litton sur, dr 2000 ft. Marts & Beavans' C. L. Lackey 1, J. Gray sur, abnd 2228 ft. Olsen Oil Co.'s M. Murchison 1, A Litton sur, sd 2315 ft.

CALDWELL COUNTY—Belcher & Shreiner's Mrs. G. Moody 1, Solomon Seal sur, pumping 80 bpd. Ellmag Oil Corp.'s W. Pope 1, J. D. Rains sur, pumping 200 bbls fluid, 20 bbls is oil, will pb. Fain Gillock's Chas. Kelley 1, F. Berry sur, sd, woo 1710 ft. Heard & Heard's R. E. Brown 1, P. B. McCearley sur, sd, woo, may abnd, td 2695 ft. McNeill Pet. Co.'s F. Marino 1, Isaac Allen sur, dr 1759 ft. I. H. Wilson's C. A. Alexander 1, Dorothy Benton sur, dr 1610 ft.

DIMMITT COUNTY — Teas & Maryland Corp.'s S. E. McKnight 1, I&GN sur, dr 4115 ft.

EDWARDS COUNTY—Dan Auld et al's L. K. Henderson 1, HE&WT sur, dr 1104 ft. Amon G. Carter et al's Frank J. Sweeten 1, GC&SF sur, woc, in sd/tr hole.

FRIO COUNTY—Amerada's R. Melms 1, N. C. Alexander sur, dr 410 ft, Pagenkopf & Jamieson's Houston Est. 1, J. Figuerroa sur, testing still on pump, amount of fluid decreasing, net oil is about same.

GUADALUPE COUNTY—Housel Oil Corp.'s N. J. Carter 2, S. Highsmith sur, dr 2315 ft. Wellington's Albert Koepp 1, Wm. H. Smith sur, dr plugs 1628 ft.

LEE COUNTY—Eleousa Oil Co.'s Ira Sanders 1, J. Von Roeder sur, dr 3895 ft.

MEDINA COUNTY—M. L. Walker's E. Riff 1, L. Hans sur 43, dr 880 ft.

MILAM COUNTY — Kingdorr Exploration Co.'s M. Stidham et al 1, J. P. Jones sur, acid w/4000 gals, test sw, pb 3776 ft, prep to test again.

TRAVIS COUNTY—C. O. LaShelle & N. D. Gardner's A. T. Giles 1, dr 710 ft.

WILSON COUNTY—Pat Higgins' Mrs. A. Higgins 1, A. Trevino sur, abnd 2403 ft. Wm. D. Parkinson's O. F. Burney 3, S. & J. Arocha sur, abnd 705 ft. W. A. Richardson's E. M. Hierholzer 1, R. Salinas sur, dr 1050 ft.

ZAVALLA COUNTY—H. F. Wilcox O&G Co.'s T. J. Gilliam 2, GWT&P sec 11, dr 2413 ft.

LAREDO DISTRICT

DUVAL COUNTY — T. R. Andrews' A. Hazelwood 1, surveys 559 and 357, ru. J. L. Collins & Co.'s E. R. Hagist 1, BS&F sur 267, dr 250 ft. Gier & Kones' W. R. Peters 2, sur 38, pb/td 1866 from 2742 ft, completing through perfs. Frank J. Gravis' F. Vaello et al 1-A, San Andres gr, dr 3365 ft; R. Schallert 1, sur 239, dr 2710 ft. Lockhart Bros.' R. J. Rogers 1, sur 277, abnd 5502 ft. Magnolia's DCRC 1, BS&F sur 261, dr 3382 ft; D. Ruiz 1, sur 190, abnd 5485 ft. Rudco's K. L. Ellis 1, GC&SF sur 308, dr 2060 ft, o/odor in Cole/snd 1740-47 ft. Slaughter & Hugles' J. B. Hunter Est. 1, J. Pointevent sur, ran elec formation tester, may set csg 4732 ft. Wellington's J. F. Welder Heirs 8-D, sur 381, made squeeze job, wocs 1720 ft.

JIM HOGG COUNTY—Darby Pet. Co.'s R. Holbein 1-A, sec 6, comp pb/td 1812 ft, Co'e snd 1765-82 ft, 7 in at 1812 ft, perf 1765-82 ft,

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comp 20 mcf gas cp 400 pounds. French Oil Corp.'s Paula V. de Garza 6, sur 269, wor to rework 1063 ft.

LASALLE COUNTY—Ralph B. Reed et al's L. Yeager 1, sur 39, dr 425 ft.

McMULLEN COUNTY—Adams & Lefevre's M. Selman 2, sec 58, cor. Govt Wells 2505-13, coring 2513 ft. Alabama Minerals' M. Gordon 2, sur 127 abnd 2416 ft. Gilcrease O&G Co.'s A. C. Miles 1, Charles Stephens sur, dr 2110 ft. C. C. Shumway's Shiner Ranch 12, G. J. Goode sur, lcn.

STARR COUNTY—J. L. Collins & Co.'s A. Guerra 1, sh 6, dr 5375 ft. Henshaw Bros. & Davis' M. M. Garcia 1-A, por 89, to set csg 3250 ft. Moss & Heard's S. B. Ricaby 7, J. of Camargo, coring 1620 ft. Sun's H. P. Guerra por 109, dr 2710 ft. Transwestern's T. B. Slick School 1, sur 266, rec ds, now fsg for dr collar 6860 ft.

WEBB COUNTY—Mills Bennett Prod. Co.'s A. E. Gates 1, W. A. Cavitt gr, coring 2160 ft; Maria G. Martin 2, sec 458, abnd 2568 ft. Bridwell Oil Co.'s A. S. Billings 1, CCSD & RGNG sur, lcn. Lemp Oil Co.'s N. H. Clark 1, por 33, dr 559 ft. C. H. Lewis' C. G. de la Garza 1, sec 48, dr 2035 ft. J. R. B. Moore's Garcia & Villareal 1, sur 338, mir.

ZAPATA COUNTY—Coyle & Callaway's F. Flores 1, por 37, coring 2205 ft. Ray L. Martin's S. Vela 1 ,blk 77, lcn temp abnd.

CORPUS CHRISTI DISTRICT

BROOKS COUNTY — Standard of Texas' Mestina O&G Co. 10 (lse 1), coring 2684 ft, rec 305 ft mud, no gas, oil, wtr.

DEWITT COUNTY—I. K. Howeth et al's F. G. Gips 1, Wm. Montgomery sur, abnd 4304 ft. Trinity Pet. Co.'s C. D. Bolting 1, R. Galletty sur, mim.

GOLIAD COUNTY—Goliad Oil Co.'s S. E. Cole 2, lot 33, set 316 ft of 5½ in blank liner to 5609 ft, cemented, prep to perf. Rual B. Swiger et al's Carrie Wood 1-B, T. J. Heard sur, dr 4125 ft.

HIDALGO COUNTY—Atlantic's Mrs. E. T. McCalip 1, sec 175, reaming to set 7 in 8505 ft. Gulf States' Delta Orchards 2, sec 94, dr 5665 ft. Y and B Oil Co.'s Waite Bros. 1, sh 382, coring 5500 ft gas sand 5399-5422 ft.

JACKSON COUNTY—Hargrove & Crosby's Hodges 1, La Ward Farms sur 7, dr 3372 ft. Hargrove & Echols' Mike Strauss 1, A. N. Clare sur, abnd 6526 ft. Sam G. Harrison's H. A. Meyer 1, M. L. York sur, ru. Magnolia's West Ranch 1, Ramon Musquiz sur, ru.

JIM WELLS COUNTY—H. M. Hill et al's B. Kuether 1, SK&K sur, dr 2215 ft. Magnolia's A. A. Seeligson 7, Los Jaboncillos sur, pb 6708 ft, prep to dr plugs. H. J. Porter's Chas. Wolcott 1, W. H. Sartain & Co. subd, spudded. Pratt & Tsesmelis' J. R. Talbert 1, La Vaca gr, perf csg, td 5530 ft. Smith & Story's B. Dansard 1, SK&K sur, abnd 3255 ft.

KARNES COUNTY—Ivan Howard's F. P. Moczygamba 1, E. Seguin sur, sd, may dd, 2178 ft.

KENEDY COUNTY—Sal Vieja Oil Corp.'s Garcia Land & Cattle 1, San Juan de Carricitos gr, dr 5587 ft.

KLEBERG COUNTY — Magnolia's Anton Dietz 1, sec 7, lcn. Superior Oil Co.'s Theo. W. Koch 1, blk 32, dr 3965 ft.

LIVE OAK COUNTY — L. Franklin's L. Odem 1, R. Everett sur, dr 1760 ft. Charles Hannah's C. H. Wedding 1, Bridget Haughy sur, may abnd. Holland Oil Co.'s Alamo Lumber Co. 1, J. Poitevent sur 99, prep to sp. Reynosa Oil Co.'s W. O. Nichols 1-A, Simeon Ryan sur, dr 478 ft.

NUECES COUNTY — Culton & Meaders' J. L. Bailey Est. 1, blk 65, reaming to core ahead 5288 ft. Richardson's Bertha Cunningham 1, sec 77 (closed well), coring 5135 ft. Sannix Oil Co.'s E. Nesloney 1, Casa Blanca gr, closed well. Southern Minerals Corp.'s Richard King 2, blk 6, turned into storage, flowing several bph oil & sw, no gauge; Ida Walker 1, sec 40, mim. Union Prod. Co.'s C. L. Galladay 1, R. Garcia gr, dr 3910 ft.

REFUGIO COUNTY—Hogan Oil Co.'s J. S. Kelly 1, James Power sur, dr 5735 ft. F. W. Shield & Southern Cross Oil Co.'s M. H. Ryals Est. 1-C, Refugio Town gr, comp sand 6778-6807 ft, 5½ in at 7141 ft, perf 6780-86, flowed 192 bbls 24 hrs, 11/64 in ch, tp 2350 & cp 2450 pounds.

SAN PATRICIO COUNTY — Argo Oil Corp.'s A. Soehnge 1, PJ&M Delgado gr, encountered heaving sh 6225, set 7 in below 6200 ft for protection. Pat Rutherford's W. T. George 1, R. Saddler & J. Garcia surveys, set sur csg, woc.

VICTORIA COUNTY—W. V. Bowles & Co.'s D. L. Robertson Est 1, T. C. Burnham sur, coring 5235 ft. Gulf's Mahon & Buehler 1, J. Poietevent sur, reaming to sd/tr, shot dr pipe 278 ft off btm. Stanolind's Henderson & Pickering E. Benavides sur, cutting out ds 7468 ft.

WILLACY COUNTY—Magnolia's F. Armendiaz 1, San Juan de Carricitos gr, coring & dr 6785 ft. Shell's Yturria Cattle Co. 2, San Juan de Carricitos gr, coring 7845 ft.

WYOMING

ALBANY COUNTY—Ohio Oil Co.'s Griffin 2, csw se sw 2-21n-77w, dr 1853 ft.

CARBON COUNTY — Superior Oil Co.'s Christensen 1, nw nw 7-12n-92w, coring 1570 ft.

FREMONT — Stanolind Oil & Gas Co.'s Johnson 1, cse se 3-33n-96w, dr 4433 ft.

HOT SPRING COUNTY — J. W. Bales' Government 1, w½ se sw 28-43n-93w, Red Springs structure, mim.

NATRONA COUNTY—General Petroleum Corp.'s Government 1, nw nw se 21-35n-77w, dr 4000 ft.

SWEETWATER COUNTY—Mountain Fuel Supply Co.'s Hay 1, ne se nw 2-16n-110w, dr 1576 ft. Mountain Fuel's Williams 1, ce¼ ne 5-12n-95w, pb to 5382 ft from 5680 ft.

WESTON COUNTY—John Brobry's George 1, sw ne nw 26-48n-64w, sd 1650 ft repairs.

UTAH

GRAND COUNTY—Cane Creek Oil Co.'s Government 1, nw sw 31-26n-21e, dr 700 ft. Columbia Crude Corp.'s Rath 1, ne sw 12-25s-20e, dr 2326 ft.

SUMMIT COUNTY — Longwall Petroleum Co.'s No. 1, se sw se 35-3n-5e, dr 2430 ft.

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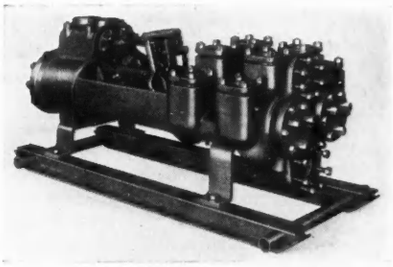
BOILER FEED AND GATHERING PUMP
Worthington Pump & Machinery Corporation

Worthington Pump and Machinery Corporation, Harrison, New Jersey, announces development of a new pump designed specifically for high-pressure boiler feed and gathering service in the oil fields. This machine is a 10 x 4½ x 10 type "PG" duplex steam pump.

The liquid end of the new unit, conservatively rated for a working pressure of 1000 pounds per square inch, is of the side pot type. Individual openings are provided over each valve, which makes them easily accessible. The steam end features piston steam valves designed for 350 pounds steam pressure. All pressure joints have been eliminated by casting the steam cylinders and steam chest integral. It is mounted on steel skids for portability.



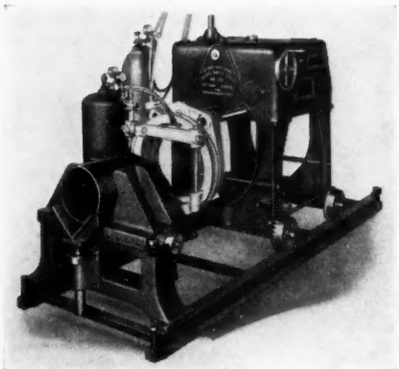
Worthington Boiler Feed and Gathering Pump

TORCH CUTTING MACHINE
Oster Manufacturing Company

Oster Manufacturing Company, 2057 East 61st Place, Cleveland, Ohio, has just announced an improved model torch cutting machine which supersedes No. 212.

The new machine, known as No. 222, which duplicates in design any pattern required for pipe welding jobs, does not require the use of cams, templates or special fixtures, and it is claimed that the surface it produces has the appearance of a lathe tool cut.

The cutting torch is guided by a mechanism which duplicates the motion of a torch held in the operators hand. It will cut pipe from 2½ to 12 inches, making tees, reducing tees 90 degrees, branch reducing tees 45 to 90 degrees, elbows, miters, Y's and blunt bull plugs, as well as hole cutting. The case containing the generating mechanism is mounted on 4 legs which are equipped with flanged wheels running on a track.



Oster, No. 222 Torch Cutting Machine

The settings of the generating mechanism are regulated by positioning a rotating beam or lever which operates a reciprocating slide. The beams are marked to show the settings for the various sizes and types of cuts, so that it is a simple matter for the operator to make the correct setting.

The reciprocating slide, in turn controls the movement of an oscillating lever which reproduces the movement in the torch carrier. The method of imparting movement to the rotating lever is through a hand wheel, located at the side of the generating mechanism case which also produces the drive for rotating the torch carrier ring around the pipe. The operating hand wheel is located conveniently for the operator where he can clearly see the work as it is being done.

Floor space occupied by the machine, including the track unit, is 3 feet 4 inches by 9 feet. Its net weight is 3000 pounds.

CHASER GRINDERS
Landis Machine Company

The Landis Machine Company, Waynesboro, Pennsylvania, announces a new line of chaser grinders to replace the outdated model "Y" and No. 2 grinders.

The new line of chaser grinders consists of three models that covers the range of sizes of Landis chasers. This makes available a machine that is suitable for any condition under which it might be required, states the manufacturer.

These new grinders are motorized, the grinding wheels being mounted directly on the armature shaft of the motor, thus eliminating gear or chain drives. Two grinding wheels, one cup and one straight, a supplied as standard equipment. The grade and grain, as well as the size of the wheels used on these grinders, were selected for longer life and efficiency in grinding.

The straight wheel is used for grinding the rake angles of Landis bolt chasers where a leadscrew is not used. A rest that is adjustable to any angle is provided to facilitate this operation. The straight wheel may also be used for miscellaneous grinding. The cup wheel is used for grinding the lead and rake angles of all pipe chasers and bolt chasers when the thread is to be cut with the use of a leadscrew. The motors used in these grinders are of the ball-bearing,

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continuous duty type. A ball thrust bearing on the armature shaft assumes the thrust load of grinding chasers on the face of the cup wheel.

A new type of swivel head is employed on all Landis chaser grinders. The chaser clamping screw contacts the chaser on the dovetail surfaces in the same manner as the chaser clamp on a die head. This provides a secure support to the chaser and tends to insure that the rake and lead angles are accurately ground. The swivel head is fully graduated so that any degree of rake and lead angle required may be obtained.

BULL PLUGS AND SWAGE NIPPLES

W. C. Norris, Manufacturer, Inc.

W. C. Norris, Manufacturer, Incorporated, announces that all bull plugs and swage nipples now coming through the factory are finished by a special electro plating process which they call "Norrisizing."

Norris Rustless Bull Plug

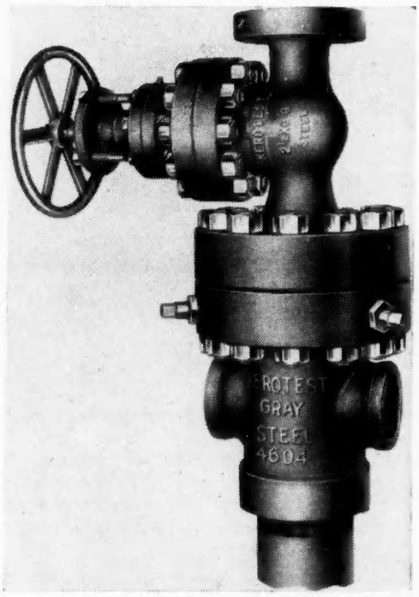
Norris Rustless Swag Nipple

It is claimed that fittings so treated are impervious to corrosion, that the appearance of the "Norrisized" swaged nipples and bull plugs remains bright and new throughout their useful life,

FLOW LINE VALVES

Kerotest Manufacturing Company

Kerotest Manufacturing Company, Pittsburgh, Pennsylvania, recently developed its new type "G" line of valves which according to the manufacturer, represent an outstanding advance in high pressure valve design and construction. These valves were designed and built for 10,000 pounds test pressure or 5000 pounds working pressure. Large factors of safety have been provided. All castings are made of heat-treated manganese molybdenum steel with a minimum tensile strength of 100,000 pounds. The stems are heat-treated nickel steel forgings and extra large high-tensile bolting is used throughout.



Kerotest Type "G" Flow Line Valve

This Week with the Industry's EQUIPMENT SUPPLIERS

Iron & Steel Products Increases Personnel

Iron & Steel Products, Inc., East 135th Street, Chicago, recently announced that it has obtained the services of Louis H. Dimick, formerly connected with Clapp, Riley & Hall Equipment Company, Chicago, and C. William Benz, formerly with Cudahy Packing Company.

Campbell Named Director of Sales for Marmon-Herrington

Marmon-Herrington Company, Indianapolis, Indiana, announces the appointmetn of C. Alfred Campbell as general sales director.

Campbell has been associated with several leading companies in the auto-

C. ALFRED CAMPBELL
Director of Sales for Marmon-Herrington Company

motive industry, specializing in commercial and industrial transportation units.

Caterpillar Tractor Company Announces Changes in Personnel

Caterpillar Tractor Company, Peoria, Illinois, recently announced five important changes in its personnel.

C. Parker Holt turns over the office of executive vice president to A. T. Brown, formerly vice president generally administering the accounting, treasury, traffic and parts departments. Holt returns to the San Leandro, California, office of the company where, as vice president, he will direct all activities and coordinate the work of the several departments with the headquarters of those departments in the Peoria office.

L. B. Neumiller, formerly director of industrial relations, has been elected vice president in charge of parts, service and traffic departments. D. G. Sherwin has also been named vice president generally administering the advertising, sales and treasury departments.

D. A. Robison, formerly assistant treasurer, has been elected treasurer of the company to fill the vacancy created by the promotion of Sherwin.

Penick Will Tour Illinois Fields

A. J. Penick, president of Oil Center Tool Company, is making a tour of the Illinois fields before returning to Houston, after attending the A.P.I. meeting in Chicago, with K. T. Penick, secretary-treasurer of the company.

Palmer Joins Southwest Supply Company

Southwest Supply Company, Bartlesville, Oklahoma, recently announced the appointment of W. E. Palmer, formerly connected with the National Supply Company, as vice president, with headquarters in the Philtower Building, Tulsa, Oklahoma.

McNeal Returns to Landis Machine Home Office

J. M. McNeal, European sales manager of the Landis Machine Company, Waynesboro, Pennsylvania, recently returned to the home office for a visit. He is headquartered at Birmingham, England, but also devotes his time to the company's interest on the continent.

Titusville Appoints Reed General Manager

Struthers-Wells-Titusville Corporation, Warren, Pennsylvania, recently announced the appointment of R. J. Reed as general manager of its Titus-

R. J. REED
General Manager for Titusville Iron Works Division

ville Iron Works Division at Titusville, Pennsylvania. Reed has been associated with this division for more than 10 years and until his recent appointment held the position as sales manager.

Clark Receives Compressor Order From Iraq

Clark Brothers Company, Olean, New York, recently announced that the Iraq

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WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

Work is underway on this new building for the exposition at Tulsa, part of a program that totals $250,000

Petroleum Corporation has ordered three additional 300-horsepower Clark balanced opposed electric driven compressors for its crude stabilization plant located at Kirkuk, Iraq. The first of these machines will start on its journey within the next few weeks.

Tulsa Show Announces $250,000 New Building

Announcement of a $250,000 building program for the tenth International Petroleum Exposition at Tulsa, May 14 to 21 has been made by Exposition President W. G. Skelly.

Ten buildings are included in the program as follows: new exhibit building; modernistic cafeteria; two-story office structure; and seven buildings to be constructed by individual exhibitors.

The new exhibit building, to be constructed just south of the Oklahoma building, will contain 128 10 by 10 foot booths. Plans call for a structure 380 by 60 feet. When finished the new structure will increase the inside exhibit booths to 604, including those in the five exhibit buildings already on the 20-acre site.

The cafeteria building, previously announced, is under construction. A directors' room, and double the office space will be included in the new office building.

The seven firms who have already announced plans for permanent buildings of their own on the grounds are: International Harvester Company; W. C. Norris Manufacturing Company; Gaso Pump and Burner Manufacturing Company; Oil Well Supply Company; Bovaird Supply Company; Hinderliter Tool Company; and The Petroleum Engineer.

Tulsa Chapter American Institute of Electrical Engineers formed

A chapter of American Institute of Electrical Engineers has been organized in Tulsa and interest has led to a large enrollment although the third meeting has not yet been held. R. K. Lane, vice president of Public Service Company of Oklahoma has been elected chairman with Professor A. Nueter, Oklahoma A. & M. College, vice chairman and D. J. Tuepker as secretary. Meetings are to be held regularly in the auditorium of Public Service Company.

The next scheduled meeting is for November 22 at 7:30 p. m. "Communication and the Oil Industry" will be the subject of a paper by F. P. O'Connor, Superintendent of Telephone and Telegraph, Stanolind Pipe Line Company. Discussion of the subject will follow the presentation.

New book on properties of gas in West Virginia

Charleston, W. Va.—The West Virginia state geological and economic survey last week released a book on "Physical and Chemical Properties of Natural Gas of West Virginia," written by State Geologist Paul H. Price and A. J. W. Headlee, chemist and gas analyst. It is one of a series being issued by the survey on the natural resources and geology of West Virginia.

The report includes chapters on the geology of West Virginia, history of the natural gas development of the state and complete fractional distillation analyses of several hundred well samples collected from every gas producing horizon in the state, 125 analyses of the gas served 42 cities and towns, and a discussion of the effects of refining natural gas.

Announcement has been made of publication of Supplement No. 2 to the Ninth Edition of "API Standards No. 9-A, Specifications for Wire Rope," which incorporates recent changes. The supplement incorporates material previously published in Supplement No. 1, dated August, 1935, which now is superseded.

PRACTICAL PETROLEUM ENGINEERS' HANDBOOK

By **JOSEPH ZABA, C. M. M. Sc.**
Petroleum Engineer, Rio Bravo Oil Company
and
W. T. DOHERTY
Division Superintendent, Humble Oil & Refining Company

For a number of years there has been a growing demand for a handbook containing formulae and other practical information for the benefit of the man working in the production and drilling branches of the oil industry. So great has been this need that many engineers have tried to accumulate their own handbooks by clipping tables, formulae and figures from scores of sources.

The co-authors of this volume discovered by coincidence that each had been for a period of several years accumulating practical data which through their collaboration appears in this book. Both of them are men who have not only received theoretical training but who have had many years of practical experience as engineers in dealing with every day oil field drilling and production problems.

As a result of this collaboration of effort the publishers of this volume feel that it is a most valuable contribution to oil trade literature.

Its purposes are distinctly practical. The tables, formulae, and figures shown are practical rather than theoretical in nature. It should save the time of many a busy operator, engineer, superintendent, and foreman.

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Squeaks from the Bull Wheel

He Knew

A lady was having difficulty in teaching her new Chinese servant how to receive calling cards. The lady went outside and entered her own front door, giving the Chinaman a card.

The next day two lady callers presented their cards. Comparing them with that of his mistress, the Chinaman replied: "Tickets no good. Can't come in."

Economy

"Is your wife economical?"

"Sometimes. She used only 30 candles on her fortieth birthday cake."

Health

"You don't drink milk?"

"Nope."

"Live on a farm and don't drink milk at all?"

"Nope, we ain't hardly got enough for the hogs."

Zoology

"What is a rabbit?"

"A rabbit is a little animal that grows fur that other animals get credit for when Mama wears it."

Ichthyology

"Willie, can you tell me if fish can travel long distances?"

"Well, ours go around the globe every day."

Botany

"Molly, where had I better plant these Baby Breath seeds?"

"Well, I'd plant 'em between the 'Mums and Poppies."

Grammar

"William, what are the two genders?"

"Masculine and feminine. The feminine are divided into frigid and torrid; the masculine into temperate and intemperate."

Psychoanalysis

"Sweetheart, I'm sorry you think I'm conceited."

"Well, I wouldn't exactly say you are conceited, but I do think you're suffering from 'I' strain."

Domestic Science

"It was considerate of Jones to buy his wife a new washing machine."

"Sure was! The old one made so much noise he couldn't sleep."

Surprise

"How you frighten me, John!"

"Why?"

"Oh, you found the keyhole so quick I was afraid it was somebody else."

War

"Where d'ya get the black eye?"

"In the war."

"What war?"

"The boudoir."

Dry Goods

"And who made the first cotton gin?"

"Heavens! Are they making it from that too?"

Lazy

"Those are my grandma's ashes over there."

"Oh, so the poor old soul has passed on?"

"No, she's just too lazy to look for an ashtray."

No Hurry

An evangelist, after a long exhortation, demanded that all members of the congregation who wanted to go to heaven should stand up. All rose except one man.

"What!" cried the evangelist. "Don't you want to go to heaven?"

"Not immediately," he replied.

Needed Cooperation

The yardmaster was interviewing an Irishman who had applied for a job as a motor bus driver.

"Can you drive a car?" asked the yardmaster.

"Can Oi drive a car?" repeated the Irishman scornfully.

"Well, suppose you run the bus into the shed."

Pat climbed onto the trembling vehicle. He looked around, grabbed the biggest lever and pulled it for all he was worth. Zip—she went into the shed. Pat saw trouble ahead, and guessing what would happen, reversed the lever. Out she went; then in again.

"I thought you said you could run a car," demanded the yardmaster.

But Pat had an answer ready. "Oi had her in three times. Why didn't ye shut the door?"

Better Pleader

At a meeting of church dignitaries a tramp accosted a group of churchmen and asked for aid.

"No," one of them told him. "I'm afraid we can't help you. But you see that big man over there?" he pointed to another clergyman. "Well, he's our youngest bishop, and he's a very generous man. You might try him."

The tramp approached the young bishop confidently. The others watched with interest. They saw a look of surprise come over the tramp's face. The bishop was talking eagerly. The tramp looked troubled. And then they saw something pass from one hand to the other.

The tramp tried to slink past the group without speaking, but one of them called to him: "Well, did you get something from our young bishop?"

The tramp grinned sheepishly. "No," he admitted, "I gave him a dollar for his new cathedral!"

Hardest

What's the most difficult thing you ever did?

Making 10 easy payments.

"Doc, how much is this operation going to cost?"

"Oh, about $500."

"Now, look, Doc. I don't want no fancy hemstitching. Just plain sewing'll do."

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